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ABSTRACT

Beginning with the observation that sex differences affecting the learning process have largely been ignored in our schools, this dissertation reviews literature on the differences in learning characteristics of boys and girls and proposes a proprioceptor stimulation or multisensory approach of teaching. The author maintains that kinesthetic methods are more appropriate for teaching boys than the visual-auditory approach used for both boys and girls now. By presenting data from various studies which indicate that the larger numbers of juvenile delinquents and retarded readers in elementary grades are boys, the author argues that boys are being feminized by our current educational system. It is further stated that proprioceptor functions, related to motor patterns controlled in the lower brain centers, can act to (1) destroy previous learning; (2) rebuild capacity in the integrative process where brain tissue has been destroyed; (3) develop perceptual abilities as in the case of nonreaders; (4) incorporate individuals, groups, objects, and locations as extensions of ourselves; (5) circumvent higher brain functions; and (6) distort integrative functions resulting in emotional and behavioral problems. A bibliography is included. (AL)

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ABSTRACT

WHY JOHNNY CAN'T LEARN TO READ, OR SEX DIFFERENCES IN EDUCATION,
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Words are the tools man uses in his thinking process. Languge its broadest sense, represents symbols of mental thought. The spoken word represents a symbol of an actual object, feeling, condition, or action. This auditory symbol is a result of a muscular process- the action of the throat, tongue, lips, mouth, and other body muscles. Writing and reading carry this operation one step farther and represent visual symbols of an auditory symbol of a muscular process resulting from a mental thought. Much of our behavior is based on our thinking process using words in which proprioceptor stimulation has had a basic and fundamental part in the initial development and expression.

Reading is an expression of symbolic thought. It is a form of communication requiring the successful manipulation of symbols of symbols of mental thought. It involves a neural integrative process in the brain resulting in part from past experiences, perception, memory, learning, and capacity which includes physical, emotional, and intellectual development.

Spelling compared to reading is an encoding process while reading is a decoding process. Reading involves recognition skills while spelling involves recall skills. Spelling is a form of symbolic thought. It requires a motor ability to successfully reproduce visual symbols.

In the symbolic thought process, there are marked sex differences. Girls as a group go along with the visual field while boys as a group are more muscular or kinaesthetic. Boys have a stronger use of proprioceptor stimulation. The extent of the development and potential of this neural integrative process in the human brain, symbolic thought, constitutes a basic growth drive in the human. Symbolic thought plays a vital part in self preservation of the

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individual and the species, communication, obtaining basic needs- both physical and emotional, and seems to be a growth drive intrinsic to man. The blocking, destruction, impairment, or mal-functioning of this integrative process, can constitute a threat to the adjustment, emotional health, or survival of man.

The proprioceptors have a vital function in many areas other than in their use of the production of auditory symbols and the writing of visual symbols in the symbolic thought process. They are basic to all human movement. The proprioceptors located in the smooth muscles, joints, and tendons feed information into a definite organ of the body. The vestibular system and the proprioceptors functionally form one receptive system. The central organ where this takes place is the cerebellum. The cerebellum by unconscious process exerts a continual reinforcing action on the activity of all other nerve centers. There seems to be integrative functions in the cerebellum for the cortex as afferent fibers which leave the cerebellum make up one-third as many fibers as the number that enter it.

The proprioceptors may be much more important than suspected previously becasue their function goes on largely unnoticed in a route directly to the lower brain centers. In fact the proprioceptors may be the most important and sixth sense of man. We already know feelings, responses, images, and patterns can be conditioned to motor patterns or proprioceptor stimulation. It now also appears the effective use of the proprioceptors can (1) destroy previous learning as in communistic techniques of "brainwashing", (2) rebuild capacity in the integrative process where brain tissue has beendestroyed as in cases of aphasia, (3) develop perceptual abilities as in the case of non-readers, (4) incorporate individuals, groups, machines, and locations as extensions of our selves, (5) circumvent higher brain functioning as in hypnosis, (6) have a similar affect with the other five senses in higher brain functions, (7) distort integrative functions resulting in emotional and behavioral problems.

Particularly serious problems can develop if vision and proprioceptor stimulation are not married together or develop seperately. The imposing of frustrated learning patterns upon previous conditioned behavior can also result in serious emotional problems in the individual.

The failure to take into account pronounced sex differences in the use of proprioceptor stimulation in the educational process may produce serious cultural problems. The bending, forcing, and pounding many of our boys into feminine learning patterns in the beginning grades of our elementary schools may be feminizing the American male, producing negative conditioning to the group and account for much of the violence in society today, and resulting in many culturally produced emotional problems.

The understanding and functioning of the proprioceptors have an importance in all areas of human behavior and development. The failure of many "normals" in learning to read in the class room may be due to the failure to effectively use proprioceptor stimulation as part of the teaching methods in the class room.

Stimulation of the proprioceptors does not constitute learning any more than a visual stimulation such as a bright light constitutes learning. This is a function of what, how, and when other information is married or related to proprioceptor stimulation. The process of integration is an important factor in all learning situations.

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WHY JOHNNY CAN'T LEARN TO READ
OR
SEX DIFFERENCES IN EDUCATION

by

SIVAN E. CAUKINS

A Dissertation presented to the General Faculty
of San Gabriel University in partial fulfillment
of the requirements for the degree of
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DEDICATED TO:

1. Dr. Grace M. Fernald

   Who gave birth to an idea

2. Dr. E. L. Shostrom

   Who helped work it through adolescense

3. Dr. Ed Mikesell

   Who offered the opportunity for maturity

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BIOGRAPHY OF S. E. CAUKINS

Non-readers were the first clinical experience in psychology for the writer of this paper at the UCLA Psychology Clinic headed by Dr. Grace M. Fernald, Professor of Psychology. In an individual study class with Dr. Fernald, Aphasia and Kindred Disorders of Speech, some of the ideas were born for the present theoretical development on sex differences in education. Additional experience with remedial reading classes came from working as a remedial reading teacher in several different private schools (one as the Head Instructor for Dr. Fernald) while as an undergraduate and graduate student at UCLA.

Two wars, World War II and the Korean War, interrupted this writer's education, from which he was released as a Lieut., USNR. Service during these two wars was as a line officer and not in any psychological capacity.

The Master's degree was pursued at George Pepperdine College in Los Angeles, in Psychology. The head of the Department, Dr. E. L. Shostrom, worked with the writer on some of the ideas for his Master's thesis, "Emotional Disturbances Due to Sex Differences in the

Formulation and Expression of Symbolic Thought."

After leaving Pepperdine, studies (42 units), were pursued at the Claremont Graduate School in Claremont, California, leading to the PhD degree. Studies were interrupted after completing a year's internship in Clinical Psychology at Patton State Hospital by accepting employment as psychologist in a civil service position with the Advisement Service of the Los Angeles City Board of Education. At that time the Advisement Service, in addition to being of service for vocational rehabilitation of students, was also a contract agency for the Veterans' Administration. Disabled veterans, both emotionally and physically, were counseled, in addition to those under the G. I. Bill. The close inter-relationship of emotion problems and physical disabilities came to the writer's attention at that time.

The writer left governmental employment for the bigger challenge of private practice. For the past twelve years, he has been involved in all phases of private practice including psychotherapy, hypnotherapy, psychological testing and diagnosis, vocational counseling, and marriage counseling. He holds a license from the State Board of Medical Examiners of the State of California as a Psychologist #35, since 1958, and also a license as a Marriage, Family, and Child Counselor from the Department of Professional and Vocational Standards of the State of California #621. For the last three years he has served as the Director of the Psychological Counseling Center in Long Beach, California.

Studies leading to the PhD degree at San Gabriel University have been pursued for the past several semesters, during which time research and investigation was completed for this present paper.

This paper has opened up a number of future areas, including devising a test for the determination of visual learners--memories for colors--which the author would like to pursue in addition to developing a basic reading text for the first several years in elementary school.

CHAPTER I

DEFINITION OF THE PROBLEM - BISEXUALITY IN EDUCATION

There are a large number of "normal" students who fail or have difficulty in learning to read or spell. This problem has been serious enough to involve the attention of the Federal Government. Dr. James E. Allen, Jr.,[1] the United States Commissioner of Education, has set a national goal to be obtained by the end of the 1970's when no person will leave a school system anywhere in the country without the ability to read properly.

This effort will be called "The Right to Read." As reported, the teaching of reading skills is the single most important function of education. Improving children's reading ability is a simple, clear goal everyone can understand and which can appeal to both liberals and conservatives.

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[1] Advance report of a speech made by Dr. James E. Allen, Jr., the U. S. Commissioner of Education, before the National Association of State Boards of Education, September 23, 1969. Afternoon publication of the Independent Press Telegram, Long Beach, California. Page A-6.

It is but possible that the solution to this problem is obvious but has been clouded behind our present means of looking at problems combined with a bi-sexual approach to the educational process. Our methods of teaching and approach has been the same with boys and girls.

S. B. Sarason, etc., in publication of their research supported by the National Institute of Mental Health of the United States Public Health Service, report the following:

> Perhaps the most important implication of the problem of sex differences (in elementary school children) is the need for systematic study of the conditions--familial, social class, cultural--which help determine how, psychologically speaking, boys become boys and girls become girls. Although it is safe to assume that boys and girls are responded to differentially, we are far from knowing the nature and degree of such differential response. Our ignorance of how such differential response is experienced by the two sexes is even greater. For example, girls generally learn to talk earlier than boys. Most explanations of this fact have been essentially non-psychological in nature, i.e., it reflects in some ways basic biological differences between the sexes. Without denying a role to such biological differences, we would submit the opinion that until it has been demonstrated that differential response to boys and girls learning to talk, total acceptance of a nonpsychological explanation is not scientifically warranted. It is clear from what we have just said that we are of

> the opinion that *sex differences are extremely pervasive in personality development and organization--far more important in human behavior than personality theories have recognized.*[1]

Although with a somewhat different perspective, these authors recognize and point out sex differences may be much more important than present theories allow. Biological differences are not only important in the learning process but they may help determine psychological differences. In function, they may be very closely inter-related.

The basis of this paper will be a theoretical development of the hypothesis that there are fundamental sex differences in learning which may account for some of these failures of "normal" students to learn or to have difficulty in reading and spelling. These sex differences are that males tend to be more kinaesthetic (muscular) in their learning pattern, as contrasted to females, who tend to be more visual-auditory in their approach to reading and spelling. In these school failures, we may be seeing an accentuation of these learning patterns. (This might be compared to a male who is six and one-half feet tall. His height is an accentuation of the tendency of males as a group to average a greater height than famales as a group.) This accentuation of learning patterns has given us an opportunity to be aware of fundamental sex differences which have passed largely unnoticed before.

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[1] S. B. Sarason; F. F. Lighthall; K. S. Davidson; R. R. Waite; and Ruebush, B. K, *Anxiety in Elementary School Children*. (New York: John Wiley and Sons, 1960), p. 261.

Kinaesthetic learning patterns are defined as an ability that exists within all individuals. Some individuals seem to be primarily dependent upon a kinaesthetic neural integration for the expression and formulation of symbolic thought. Muscular activity is the primary means these individuals use in first organizing and expressing these functions. Learning patterns are not restricted to symbolic thought but appear to be related to a person's total involvement with the environment. Kinaesthetic functions become a more basic or primitive means of first relating responses, behavior, and images. Whatever means an individual uses, kinaesthetic versus visual-auditory, the end result can be equal in effect. A kinaesthetic learner can be just as effective a reader or speller as a visual-auditory learner provided he uses the means best suited to his learning or perceptual patterns. Difficulty results in a learning situation where patterns are not used which are most related to the individual. Most individuals have a combination of these abilities (kinaesthetic vs. visual-auditory), but males, as an average or group, have a stronger tendency or need in this direction.

Symbolic thought is defined in terms of its formulation, expression, and use. Language in its broadest sense represents symbols of mental thought. Writing and reading would seem to carry this operation one step further and represent symbols of mental thought.[3] Therefore, functions of speech, reading, writing, and further refinements of these functions are all termed symbolic thought. We think in terms of words, and much of our behavior is based on words. Symbols become the means or tools of the thinking process and much of our behavior is determined by our thought process.

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[3] J. Hughlings Jackson, "Aphasia and Kindred Affections of Speech," together with a complete bibliography of his publications on Speech and a reprint of some of the more important papers, Brain XXXVLII, (1915), 1-190, p. 116.

Epstein and Morgan[4] define symbolic process as "any psychological function which is a substitute for or representative of stimuli or responses not present at the time of the process and which is capable of arousing selective behavior." For purposes of this paper, symbolic thought may be termed language in its broadest sense and to include basic elements of our thinking and behavioral processes.

There is already a great deal of research in separate scientific disciplines with different language, definitions, and frames of references. These will be related to support the hypothesis of this paper. This will range from physiology in the study of the human brain; the role of proprioceptive and exteroceptive receptors; aphasia; importance of kinaesthesis in psychological diagnostic techniques and therapy procedures; research in perception and learning; and research in the educational and psychological fields regarding sex differences.

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[4] Morrin O. Epstein, and Clifford T. Morgan, "Cortical Localization of Symbolic Processes in the Rat: III, Impairment of Anticipatory Functions in Prefrontal Lobectomy in Rats," Journal of Experimental Psychology, Vol. 32, No. 6, June 1943.

It is helpful in inter-relating these various disciplines, to have a philosophical system as an overall cover. The inter-relationship of the drive for learning, as a basic human drive, to symbolic thought formulation will be such a "cover." Maslow has already seemed to recognize a force for growth in the human organism when he states:

> We may add that various recent developments have shown the theoretical necessity for the postulation of some sort of positive growth or self-actualization tendency within the organism, which is different from its conserving, equilibrating, or homeostatic tendency, as well as from the tendency to respond to impulses from the outside world. This kind of tendency to growth or self-actualization, in one or another vague form, has been postulated by thinkers as diverse as Aristotle and Bergsom and by many other philosophers. Among psychiatrists, psychoanalysts, and psychologists it has been found necessary by Goldstein, Rank, Jung, Horney, Fromm, May, and Rogers.[5]

The growth drive for symbolic thought formulation in man would appear to be basic and separates him from all other animals as much as other physical characteristics. This concept will be first developed to relate the research from other disciplines as a frame of reference for the hypothesis of this paper.

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[5] A. H. Maslow, Motivation and Personality (New York: Harper & Brothers, 1954), p. 124.

CHAPTER II.

THE BRAIN-BODY DRIVE

The growing human organism has a tremendous force and drive for maturation. At the time of conception the microscopic human-one-celled structure grows, multiplies, and expands many thousands of times. As a seed will split solid rock in growing, so the dynamic human living organism becomes a force irresistible in nature. Food, water, and the other necessities for the perpetuation of life are the fuel and support systems supplying the energy and the environment for the dynamic energy transformation of growth.

The end product, functions, and physical form are a result to a large extent of the laws of growth in the nervous system. In order to establish the drive for symbolic thought formulation in the human organism, it will be necessary to establish a physiological basis for this drive as being intrinsic to the human organism. This, combined with a study of the operations as they relate to physical structure, should furnish some substantiation for the need in the human individual to develop symbolic thought. The psychological literature should also supply evidence of the nature of the drive and difficulties resulting from its frustration or confusion.

The inter-relationship of growth and learning to basic drives within the organism is first evidence in the fields of biology and comparative psychology. Numerous studies by Coghill have correlated neuromuscular growth and integration of behavior patterns in amphibian larvae. He shows the integration of action systems is primarily regulated by factors inherent within the organism from the very beginning of its development. Coghill concludes that patterns of behavior are acquired in the early states of larval development by saying:

> The growth of the nervous system, insofar as it has been definitely correlated with the development of the behavior pattern, demonstrates that rational patterns arise by a process of individuation within a primarily integrated total pattern, and that the latter does not arise by an integration of independent reflexes. The form of the behavior pattern in Amblystoma up to and including locomotion is determined by specific neural counterparts that acquire their specificity in functional value through laws of growth in the nervous system. There is evidence also that mechanisms that condition the performance of such a behavior pattern as locomotion in mammals are determined in the same manner. It is important, therefore, to know how far growth, in the sense of the differentiation of new functional parts of

> cells, is projected into the life-history of vertebrate, for so long as it continues it must participate in the function of the nervous system as a whole and, therefore, in the development of the behavior pattern.[6]

Human beings, however, differ markedly from animals. One of the basic differences is the refinement in the development of language--speech, reading, and writing. There is a corresponding development in the human brain that makes these functions possible that is found in no other animal. For speech, there is an ideational mechanism and a motor articulation mechanism. For writing and reading words, the mechanism is also located with the general structure of the dominant hemisphere speech mechanism.

Penfield and Roberts have this to say about human development:

> During normal speech it may be said that two

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[6] G. E. Coghill, "Correlated Anatomical and Physiological Studies of the Growth of the Nervous System in Amphibia: VI. The Mechanism of Integration in Amblystoma Punctalum," Journal of Comparative Neurology, 41 (1926), 95-152, 136.

mechanisms are employed, and both are present only in the human brain. There is an ideational mechanism which makes available the acquired elements of speech, and a motor articulation mechanism that is inborn but may be utilized by the voluntary motor system. (a) The ideational part of speech, whether spoken, heard, written, or read, depends upon the employment of a certain portion of one hemisphere alone - normally the left hemisphere. *This localization of a function in one hemisphere is, in itself, something new in mammalian evolution*. Other intellectual functions, such as perception, the recording of current experiences, and the storing of generalizations or concepts in memory, are made possible by the utilization of homologous areas of cerebral cortex on the two sides, together with the coordinating and integrating work of the higher brain stem.

It is thanks to the action of the ideational speech areas of the dominant cortex, and their connections with a small zone of gray matter below the cortex in the thalamus, that words may be "found" by the individual. Speech is made possible because of neurone patterns and reflexes that are formed there during process of language learning.

The nerve cells and nerve branches of some parts of the brain, or perhaps the synapses which join the branch of one cell to the body of another cell, are altered by the passage of a stream of electrical potentials. This is what makes permanent patterns possible. This is the basis for all memory.

Thus man is able to find, in his ideational speech mechanism, four sets of neurone patterns; the sound units of words employed when listening to speech, the visual units for reading, and the manual units for writing.

(b) Articulation, on the other hand, depends upon the employment of special motor areas in the cortex of either hemisphere. There are areas devoted to vocalization - two in each cortex - *and no other mammal yet studied possess such areas in the motor cortex*. There are areas also for other movements of mouth, tongue, and throat.

> The streams of neurone impulses that produce voluntary movement arise in the circuits of integration in the brain stem--the CENTRENCEPHALIC SYSTEM. They flow out to these cortical motor areas and from there down to the muscles of mouth and throat and diaphragm. But if the motor areas of cortex are damaged or removed on one side, those on the other side soon serve the purposes of speech movements quite satisfactorily.[7]

It is important for purposes of this paper that Penfield and Roberts define an important part in the formation of language (speech) a motor function of which development in the human brain is intrinsic to man. These brilliant neurosurgeons have made significant contributions to the understanding of human behavior. In discussing language from the same text they state:

> But the baby must now take the next step, and no animal can follow him there. He _must_ speak. . . . This verbal unit has its neuronal pattern located in the left hemisphere speech mechanism. . . . Thus when the child begins to understand, he is establishing general concept-units in the brain and corresponding word-sound units. When he begins to speak he must establish word-formation units. During this early experimental period he uses his voluntary motor system to make a more accurate sound, thus correcting and reinforcing the image of how to speak the word. What I called an _image is really a pattern of the motor complex required_

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[7] Wiler Penfield and Lamar Roberts, _Speech and Brain-Mechanisms_ (Princeton, New Jersey: Princeton University Press, 1959), p. 247-250.

> to product the word. This image or motor pattern is a unit, too, and the neurons involved in the pattern-unit are clearly located in the speech areas. . . . Between word-pattern and word expression must come a conscious selection and decision. This means that the employment of the centrencephalic system. That is the system of central organizing connections which makes available to conscious thinking the many different neuronal mechanisms within the brain. . . . When the child begins to write words and to read words, two new sets of units must be established. They are also located within the general structure of the dominant hemisphere speech mechanism . . . the signature was not in the motor mechanism. It is in the neurone unit within the brain. Probably that applies to all the words we write. . . . The written word is carried as a final pattern - a pattern of a motor complex.[8]

From a physiological and functional study of the human brain, symbolic thought is inherent to man and constitutes a drive that is basic to his growth and development. It should also be noted that the development of neuronal unit patterns for speech images are actually a pattern of the motor complex. As words are basic in the formation and expression of symbolic thought, so must be images of the motor complex. We cannot separate motor functions from the learning or integrative process.

Continuing this line of thought about language being basic to our thinking and behavioral process, Goldstein says "Every individual speech performance is understandable only from the aspect of its relation to the function of the total organism in its endeavor to realize itself as much as possible in the given situation."[9] Goldstein quotes G. Herder and W. von Humboldt in developing the relationship of behavior of the individual to language. He quotes Herder, "All language had its points of departure in feelings and expressions, in cries, and sounds."[10] But he denied that these utterances represented the whole of human language which is characterized by "reflection." This capacity, intrinsic for man and separating him from all animals, enables him to abstract characteristics from the complexity of impressions, to fix them, and to recognize them again in their peculiarity, i.e., to build concepts. The agent for accomplishing this is the word. This factor was stressed to an even greater degree in S. von Humboldt's theory of language. According to him, "The essence of language cannot be grasped as long as one considers it a mere collection of words. Words appear as separate entities only in an abstract consideration. They are nothing but a dead product of our bungling scientific analysis. Language is not a static phenomenon, but a dynamic process."[11]

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[8] Ibid.

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[9] Kurt Goldstein, Language and Language disturbances - Aphasic Sumptom Complexes and Their Significance for Medicine and Theory of Language (New York: Greene & Stratten, 1948), p. 21.

[10] Ibid.

The frustration, damage, or disturbance to a major drive or need of the organism should be reflected in the behavior. Illness or maladjustment should result when symbolic thought formulation is distorted, confused, or a threat is encountered in its growth or expression. The psychological literature seems to have many publications pointing out the nature and results of such difficulties.

Such maladjustment is evidenced in the report of

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[11] W. V. Humboldt, Uber de Uerschiedenheiten des menchliehen Sprachbaues. Gesammelte Schriften, Akademie-Ausgabe, 6:125 f.

McCarthy on the part language plays in psychological growth of the child.

> One needs only to consider the comparative mental vacuum in which the young deaf-mute lives before any means of communication have been established; and to compare his mental state with that of the normal child who not only can understand the language of others in order to acquire a wealth of information, but also to express his ideas, needs, and wants, as well as to influence the behavior of others. The intimate relationship most writers claim exists between language and thought is further evidence of the importance of this aspect of the child's development.[12]

Thorne recognized faulty symbolic thought formation as a cause of maladjustment and states:

> Johnson has presented a summary. . . . The person with vague unrealistic and over valued ideals experiences feelings of disappointment and inadequacy when he is unable to be what he wants and to get what he wants out of life. Part of the maladjustment stems from the very vagueness of the ideals, i.e., they are so vague that the person does not really know what he wants and is dissatisfied at attaining it. A second difficulty concerns the language which the person used in thinking about his problems. If this language is vague, too generalized, irrelevant, poorly organized and lacking in thoroughness, it follows that the person may never be able to state his problem clearly. The fuzzy thinking may extend to the

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[12] Dorothea McCarthy, Language Development in Children, X Manual of Child Psychology, Edited by Leonard Carmishael (New York: John Wiley & Sons, 1946), p. 447.

> person's whole conceptions of the meanings of life in general, his conceptions of himself, and his ideas concerning problems of adjustment. Not being able to differentiate his problems exactly, he is unable to formulate realistic goals, so that his problem thinking is vague, fuzzy, and confusing.[13]

Thorne and Johnson relate the means of forming symbolic thought as a direct cause of maladjustment in cases where the formation is faulty. Johnson states "The study of language behavior is the relationship between language and reality, between words and not words."[14] He feels no advance civilization was possible until the invention of writing and other methods of making more or less permanent records of symbolization.

Dollard and Miller leave no doubt as to the inter-relatinnship of symbolic thought to the growth processes inherent within the individual and they have this to say:

> According to our hypothesis-drives, cues, and responses that have never been labeled will

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[13] F. C. Thorne, "Principles of Personality Counseling," Journal of Clinical Psychology (1950), p. 382.

[14] Wendell Johnson, People in Quandaries (New York: Harper & Brothers, 1946), p. 113.

> necessarily be unconscious. One large category of this kind will be experiences that occurred before the child learned to talk effectively. Since the effective use of speech develops gradually and may not be established for certain categories until long after the child has learned to say "mama," the period during which major parts of social learning are unconscious extends over a considerable number of years and has no set boundaries. As has already been pointed out, this is why so many early childhood conflicts are unconscious. Even after childhood, certain aspects of life are poorly labeled. For example, many of the finer details of motor skill remain unverbalized throughout life.[15]

David Rapaport relates communication to ideation and thought, and believes that if it has not been underestimated by psychologists in the past, it has not been properly organized. He believes repression greatly limits behavior and states:

> To envisage the role of communication in psychic life, it must be remembered that ideation and thought arise when memory traces are cathected, and the major condition of forgetting is repression--that is, the withdrawal of catheses from memory traces, which are instrumental in bringing about new hierarchic levels of motivation. Furthermore, in safeguarding repression, there is a tendency to repress ideas often even remotely connected with a drive representation, and only ideas of sufficiently remote connection can become conscious; therefore, exposure to a wealth and

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[15] John Dollard and N. E. Miller, Personality and Psychotherapy (New York: McGraw Hill Co., 1950), pp. 198-199.

> variety of experiences counteracts the tendency of repression to narrow in extreme the volume of conscious thought. Finally it will be useful to envisage that, on the other hand, interpersonal communication brings us the broadest and most condensed form of external experiences in preparation for, and our reactions. The facts would lend communication a unique role in psychic life.[16]

The entire field of psychotherapy and psychoanalysis utilizes a verbal means in dealing with our symbolic thought, its formulation, and expression. Emotional problems, adjustment difficulties, and behavioral problems are changed through dealing with our system and expression of symbolic thought and the emotional field relating to these symbols.

Symbolic thought is inherent to man and constitutes a drive that is basic to his growth and development. Its formulation and expression is intimately related to behavior. Motor functions cannot be separated from the learning or integrative neural process and are an extremely important factor in its formulation. Images of the motor complex and the neurons involved in the pattern-unit are clearly located in speech areas. The development of these areas is intrinsic to man and found only in human beings. The formulation and expression of symbolic thought is important as a growth drive in the human organism. When this process is distorted, confused, or threatened, maladjustments in the organism's behavior can be expected. This growth drive is basic to the nature of man.

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[16] Organization and Pathology of Thought (Translation and Commentary by David Rapaport) (New York: Columbia University Press, 1951), pp. 726-728.

CHAPTER III

THE MUSCLE LEARNERS

There is an old story about several blind men who went to examine and report on the nature of the elephant. They meet again after conducting their examination, and a great argument ensues over their conflicting reports. One man who examined the trunk, reported the animal was a reptile very similar to a great snake; another, who examined the leg, reported it was built like a column and obviously not an animal at all; another, who was on a ladder and happened to examine the ears stated the animal had wings of a type and must be some type of giant bird. So the reports can go on and be as varied as our particular interests, needs, and frame of reference happens to be at the moment. The use of the symbolic thought concept may help unify these various and different disciplines.

How do things appear to an individual, or its perception, is one aspect of symbolic thought formulation and expression. It is closely tied and interrelated to muscular and motor complex patterns as well as to the other senses. A sound theory of perception has to be related to the learning patterns of the individual, the neural mechanisms of the human mind, and the individual's means of involvement with the environment.

The Werner Wapner[16] Sensory-Tonic Field Theory seems to be such a theory. The word tonic is used in a broad sense to include not only changes of muscular tension of a postural kind (tonicity), but also the larger, phasic contractions entering into actual movements. It applies to visceral as well as somatic muscular activity. The term sensory, particularly as used in contrast with tonic, refers to visual auditory processes.

This theory states, since any neuropsychological entity is neither sensory nor motor but a dynamic process prior to both, it may be affected in a similar way by stimulation through the receptors, as well as by direct stimulation of the muscles. Thus, perception may be affected equivalently by various kinds of sensory stimulation and direct muscular changes.

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[16] Heinz Werner and Seymour Wapner, "Toward a General Theory of Perception," Psychological Review (4) Vol. 59, 1952, pp. 324-338.

The development of this theory was the result of numerous experiments conducted in the laboratories with many different individuals. It not only points out the importance of kinaesthesis but equates it on an equal basis to a visual auditory approach in the perceptual process. The importance of this theory has not yet been integrated in the educational methods or theory in the teaching of reading as long as the approach is primarily a visual-auditory means. This would mean, at the least, an equally equivalent and additional means or resource is denied to the student in his learning process. Considering there may be sex differences in the learning-perceptual process in the formulation and expression of symbolic thought, present methods may be harmful and destructive.

Experiments pointing out the existence of marked sex differences in perception were made by Witkin[17] at Brooklyn College. A series of tests were devised to determine if it is a general characteristic of an individual's orientation to rely mainly on the visual framework or mainly on bodily experiences (kinaesthesis). In connection with this overall problem were the related subdivisions of whether a given mode of perception was a transient feature of the person or whether it tended to characterize him over an extended period of time; and if the perceptual features shown in these orientation situations tend to characterize the individual generally or do they appear only in a specialized situation. They wanted to know also if these perceptual features carried over to a pencil and paper situation.

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[17] H. A. Witkin, "Importance of Individual Differences in Perception and Personality--A Symposium Edited by J. S. Bruner and David Krella (Durham: Duke University Press, 1949), pp. 145-170.

The results of these tests were significant. They showed that men and women differ markedly from each other. These differences were always in the same direction. Women went along with the visual field much more than men and responded less to bodily experiences or kinaeshetic cues. There were, as expected, marked individual differences; however, the mode of perception of the individual also characterized his approach to paper and pencil situations (imbedded figure tests) was stable, and was a characteristic of him generally. For some men, their entire orientation was on a kinaesthetic basis.

Of even greater significance were the illness-producing conditions, even under laboratory conditions, that resulted when the subject had difficulty in establishing the position of his body or the field in which it was placed. He frequently became distressed and at time even ill. Such symptoms as sweating, dizziness, and nausea were common. The importance of the orientation process, or learning adjustment patterns employed by an individual insures his deep involvement in a situation that features difficulties even under laboratory conditions.

The significance for education must be considered. Even if we disregard the numerous failures in learning to read, the possible stress, anxiety, and sickness that are placed upon many members of our culture by the mere fact they are male or that they follow a masculine or dynamic learning pattern. Therefore, an exploration of kinaesthetic factors found in the educational processes becomes increasingly important.

An important key to kinaesthetic factors in the learning process is the extensive work of Grace M. Fernald[18] who was head of the UCLA Psychology Clinic until her death. Of one hundred cases reported on, sixty-two cases were total disability cases. These total disability cases were unable to read even the simplest elementary material. Fernald has this to say about these cases:

> The fact that we find a normal or superior learning rate with complete success as the end result in 62 cases of total disability that we have studied seems to indicate some specific peculiarity of brain structure and function in the case of these individuals. The fact that our experiments with the first grade children show that a certain percentage of them learn best by some kinaesthetic method seems to us further evidence of some fundamental difference in brain function. In all these cases the response to certain methods is immediate and the learning rate is rapid. It is not a slow, difficult process of establishing normal ability along a certain line. The learning curves from the start are exactly like those of any ordinary

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[18] Grace M. Fernald, Remedial Techniques in Basic School Subjects (New York: McGraw-Hill Co., 1943).

> group. There must be some individual differences that made particular avenues of approach successful when others fail.

Generally, Fernald has these things to say about the importance of kinaesthetic process to some individuals. The individuals who seem to need kinaesthetic content in reading, use kinaesthetic content or cues in learning other things such as foreign language, arithmetic, points of the compass, codes, etc. In experiments with Braille and mazes, the remedial learning groups were superior to control groups in learning rate and accuracy. They also proved superior in the transposition of material, as in the rotated maze. In everything they do, it is evident that these people are dependent on kinaesthetic cues. In doing mental tests, children do such tests as orientation, enclosed boxes, etc., by using kinaesthetic cues quite obviously. One has only to watch them to realize the extent to which they depend on such cues.

Fernald seems to confirm with practical case studies, the experimental results obtained by Witkin, and Werner-Wapner on differences of perception in the symbolic thought processes. Muscular activity for some people is a necessary part of the thinking process. This process may be somewhat difficult to grasp for those individuals who are visually-auditory orientated in their thinking processes. It could be compared to describing the color "blue" to a blind person who has never seen color. By the same token a kinaesthetic learner may not be aware of his basic muscular need in his learning procedures because, once integration has taken place, the end results are equal. In addition, muscular activity goes unnoticed and a person is not aware of learning taking place. Examples of this might be the person who has his finger in his mouth without noticing it. Also, trying to describe the difference in muscular responses between a poor bowler and a good bowler, in terms of pressure, feeling, tension, heat, etc., becomes impossible without describing results or techniques. Recent research by Rock & Victor[19] points out the influence vision dominates over the effect of kinaesthesis. Vision has a much stronger emotional impact over kinaesthetic cues as it allows sharper conscious discrimination.

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[19] I. Rock and J. Victor, "Vision-Touch, An Experimentally Created Conflict Between the Two Sexes," Science, 143, 1964, pp. 594-596. Also related experiments by C. Shopland and R. L. Gregory, "The Effect of Touch on Visually Ambiguous and Dimensional Figures," Quad. J. Exptl. Psych., 16, 1964, pp. 66-70.

Investigators who have utilized or recommended some form of kinaesthetic method in teaching of remedial subjects in the past were Gates,[20] Monroe,[21] Dearborn[22], Hegge,[23] and Wooley.[24] Recently Kolson-Kaluger[25] in their text, Clinical Aspects of Remedial Reading, recognize the Fernald Technique for teaching cases of primary reading disability, and state, "These children fail to learn to read under normal classroom practices and when they are sent to remedial classes, fail unless given an approach utilizing a visual-auditory kinaesthetic-tactile approach." (Some recent publications covering the latest statistics on reading cases will be covered in another chapter.)

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[20] A. I. Gates, The Improvement of Reading (New York: The Macmillan Co., 1935), pp. 8-9.

[21] M. Monroe, Children Who Cannot Read (Chicago: University of Chicago Press, 1932), pp. 120-121.

[22] W. F. Dearborn, Paper given at Ninth International Congress of Psychology (Yale University, Sept. 2, 1929).

[23] T. G. Hegge, Reading Cases in an Institution for Mentally Retarded Problem Children, Prec. Fifty-Sixth Annual Session American Association for the Study of the Feeble-Minded (Philadelphia, May 26, 1932), pp. 50, 56, 61.

[24] H. T. Woolley, Diagnosis and Treatment of Young School Failures, Dept. of the Interior, Bureau of Education, Bulletin No. 1 (1923), pp. 87-95.

[25] Clifford J. Kolson and George Kaluger,

Research on kinaesthesis is continuing and recently Posner & Konick[26] investigated the retention of visual and kinaesthetic information and found there are broad differences in the processes of short-term memory for these different kinds of skills. There is a long line of unbroken authorities dating from 1883 to the present, including some of the most distinguished authorities in psychology, pointing to the importance of kinaesthesis. A few of these are discussed in the

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Clinical Aspects of Remedial Reading (Springfield, Illinois: Charles C. Thomas, Publisher, 1963), p. 19.

[26] M. I. Posner and A. F. Konick, "Short Term Retention of Visual and Kinesthetic Information, Organiz: Behav. Hum. Perform., I, 1966, pp. 71-86.

ensuing paragraphs.

F. J. Geck reported on the effectiveness of adding kinaesthetic factors in addition to visual and auditory perceptions in the teaching of drawing. In all but one instance, the combined grades of the judges was higher for those students who had kinaesthetic perceptions.[27]

E. E. Abbott, in a study of orthography stated:

> In committing to memory groups of the deaf-mute alphabet, Smith found that the errors in recall were 16 per cent less for those series in which the observers were allowed to form the letters with the hand, as compared with series in which this motor factor was excluded. Likewise writing words simultaneously with seeing them is a considerable aid in learning them.[28]

In some normal persons, visual imagery is apparently non-existent. James states:

> I am myself a very poor visualizer, and find that I can seldom call to mind even a single letter of the alphabet in purely retinal terms. I must trace the letter by running my mental eye over its contour in order that the image of it shall have any distinctness at all. I am, myself, a good draftsman, and have a very lively interest in pictures, statues, architecture, and decoration,

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[27] "The Effectiveness of Adding Kinaesthetic to Visual and Auditory Perception in the Teaching of Drawing," Journal of Education, No. 41, 1947, pp. 97-101.

[28] "On the Analysis of the Memory Conscious-

> and a keen sensibility to artistic effects. But I am an extremely poor visualizer, and find myself often unable to reproduce in my mind eye pictures which I have most carefully examined.[29]

F. Galton states, "Scientific men as a class have feeble powers of visual representation."[30] James, in quoting from M. A. Binet, says "There are persons who remember a drawing better when they have followed its outline with their finger." Robert Graves states, "My hands have a great importance for me and are unusually sensitive. I live a lot in them; my visual imagery is defective and so I memorize largely by a sense of touch."[31]

Goldstein states:

> I would like to refer only to some authors who are in opposition to the assumption that images are basic for thinking and language: In Germany, C. Kulpe; in France, A. Binet; in the United States, Woodworth and others denied the

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ness in Orthography," The Psychol. Monogr. 11 (1909), pp. 127-158.

[29] Principles of Psychology, Vol. 2 (Henry Holt & Co., Inc., 1890), p. 61.

[30] Inquiries into Human Faculty and Its Development (London: Macmillan & Co., Ltd., 1883).

[31] Goodby to all That(New York: Blue Ribbon Books, Inc.; London, Jonathan Cape, Ltd., 1930), p. 26.

> significance of images for thinking. . . . Selz who gave a careful analysis of the thought processes, came to the conclusion that images follow the thoughts, are evoked by them. Images have no meaning, are not signs for anything. The meaning which they may carry comes to them from interpretation, which could be proved experimentally.[32]

Head maintains, "The fact that normal persons exist in whom visual imagery is apparently non-existent during waking life shows that such processes are not indispensable for thinking."[33] Both Head and Goldstein state that imageless thinking exists and the process of thinking differs in principle from the use of images in themselves.

As muscular processes are not visual in nature, the importance of kinaesthesis in the symbolic thought process cannot be understated. It could mean in addition to its being equal in effect, that there may be special factors, skills, and abilities that are related to kinaesthesis that are not true for a visual-auditory individual as the reverse would also be true.

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[32] Goldstein, op. cit., p. 26-27.

[33] Sir Henry Head, Aphasia and Kindred Disorders of Speech (London: Cambridge University Press, Vol. I, 1926), p. 369.

Experimental psychologists at last are becoming aware of the need to consider individual differences as more than troublesome error variance.[34] We need to open up more areas of investigation between human abilities and learning.

The study of the neural mechanisms of the mind has been substantiated by scientific experiments in perception and psychological experiments in learning. The Werner-Wapner Field theory, in particular, states that perception may be affected equivalently by various kinds of sensory stimulation and direct muscular changes.

There are basic sex differences in the approach in the laboratory, in behavior, and paper and pencil approaches to perception and learning. Women tend to go along with the visual field[35] much more than men and respond less to bodily experiences or kinaesthetic cues.

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[34] R. M. Gagne, Ed., Learning and Individual Differences (Columbus, Ohio: Merrill, 1967).

[35] H. A. Witkin, "Importance of Individual Differences in Perception and Personality," A Symposium, pp. 145-170.

Threat or confusion in the symbolic thought process produces illness, sweating, dizziness, and nausea, even under laboratory conditions. The means that an individual uses to successfully engage or cope with his environment is basic to his survival and to the learning process. The implications of this are that the entire cultural educational process needs to be re-examined and approached from the basis that our methods in themselves may be producing the failures in learning and contributing to emotional problems relating to the symbolic thought process.

The concept of the imagery as relating to the education and learning of the individual also needs to be re-examined. Visual imagery is not a requirement in the thinking process. Some of our best and potentially greatest thinkers may be hindered, frustrated, or even killed off by the cultural methods of the Establishment. Can we continue to afford to waste our most valuable asset, brain-power? Conservation of human resources should be as important as any national conservation program of physical resources.

CHAPTER IV

THE SIXTH SENSE

The newly born child immediately begins to use muscular responses in dealing with the environment. It sucks, cries when hungry or uncomfortable, and exhibits gross muscular movements. Kicks are often felt by the mother carrying the child prior to birth. Emotional responses, habit patterns, images, sensory data, are conditioned to and related with basic neural muscular motor patterns. In addition to there being basic sex differences regarding the emphasis of kinaesthetic vs. visual-auditory learning and perceptual patterns, it may be that muscular neural patterns have a much more basic function in the perceptual-learning processes of the organism. (Symbolic Thought Process--STP)

The writer has suggested that the dynamic process, explained in the previous chapter as the Werner-Wapner Field Theory,[36] prior to both the kinaesthetic and visual-auditory patterns of learning, is the symbolic thought process (STP) of which Penfield's[37] Centrencephalic neural organization is a key part. In the following chapter, the concept will be developed that the muscular motor complex units are also an extremely basic function in the process. This may be true even though sight has a much greater emotional impact and a growing predominance.[38]

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[36] Werner and Wapner, op. cit., p. 325.

Very generally speaking, for our discussion, there are three general levels of function in the human brain--the cortex, the lower brain centers, and the Autonomic Nervous System. Penfield's Centrecephalic System would be the highest function, the integrative relationships of all these other levels (the Central Nervous System). There are three types of receptors--exteroceptive receptors, proprioceptive receptors, and interoceptive receptors--which feed information into these centers.

Of our five senses--sight, hearing, taste, smell, and touch--the first four reach us through special organs which are alone involved in a particular sense. We are apparently less aware of sense when specific organs are not involved, and so we speak of touch as though it were the only sense present in the skin, although separate nerve endings are involved for touch: pressure, heat, cold, and pain. Sensations from the exteroceptors are fed into the cortex. (The cortex can be related to consciousness.)

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[37] Wilder Penfield, The Excitable Cortex in Conscious Man (Springfield, Ill.: Charles C. Thomas, 1958), pp 1-40.

[38] Asaac Asimov, The Human Brain (Boston: Houghton Mifflin Co., 1936), p. 250. (This shriveling of the ear trumpet in man is usually considered an indivation of growing predominance of the sense of sight.)

Interoceptors, located in organs and functions inside the body, are fed into the autonomic nervous system and are related to the unconscious. These seem to develop first in the human body.

Proprioceptors are located within the volunteer muscles, tendons, ligaments, and joints, with which we are the least familiar, but take most for granted. These sensations are fed into the lower brain centers. (This is related to the unnoticed conscious or pre-concscious.) Asimov[39] states that the lower portions of the brain utilize these sensations from all over the body in order to coordinate and organize muscular movements to maintain equilibrium, shift from uncomfortable positions, and similar adjustments. However, although the routine work is done at the lower levels, and we are not consciously aware of what is going on in our busy body while we sit, stand, walk, or run, certain sensations do eventually reach the cerebrum, and through them we remain consciously aware at all times of the relative positions of the parts of our body. The various proprioceptive sensations are sometimes. lumped together as the "position sense" for this reason. It is also sometimes called the kinaesthetic sense--"movement-feelings."

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[39] Op. cit., p. 222.

We know, however, from the work of Fernald[40] and others, that these proprioceptors have additional functions much more important than that of movement-feelings. Some individuals are entirely dependent upon them for the process of learning and in perceptual processes.

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[40] Fernald, Remedial Techniques . . ., op. cit.

Although it is extremely difficult to know exactly what takes place in the brain because we know so little of the actual process, there is enough information accumulating to draw some general conclusions. It is because our proprioceptors function in such an unnoticed manner that their importance in the education, learning, and perception has also largely gone unnoticed. It appears that their functioning may be much more basic to the total structure of the individual's functioning, symbolic thought process, or involvement with the environment.

Some of the work done in aphasia does give us important clues in the neural process involved. When there is damage done to the brain, the underlying structure may be exposed in much the same manner as when, in taking the body off a car, the basic substructure of the car is revealed--its frame and motor.

In this regard, Wepman states: . . . "aphasia is a disorder affecting the patient's total reaction pattern due to disturbance of the integrating capacity of the cortex. This working theory stresses the necessity for considering the patient as an individual in need of *re-establishing* the use of neural capacities which are present and potentially functional."[41] This contention is supported directly and indirectly by many investigators, including Jackson, Head, von Monakow, Goldstein,[42] and others.

Further evidence that brain damage results in difficulties in integration rather than capacity is reported by Rowland A. Krynauw. He treated twenty cases of Infantile Hemiplegia by removing one entire cerebral hemisphere (with the exception of the thalamus, the caudate nucleus, and its tail). The majority of these cases were complicated by epileptic convulsions. With the exception of one death, these cases were characterized by postoperative return of the motor power with lessening of spasticity, and clumsiness. Marked improvement in personality, behavior, and mentality were also noted in these cases where damaged tissue was removed. (No psychological tests were administered before or post-operative.)[43] Similar conclusions were also reached by Dandy[44] in mass cerebral removals.

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[41] J. M. Wepman, *Recovery from Aphasia* (New York: Ronad Press Co., 1951), pp. 85-86.

[42] J. Hughlings Jackson, *op, cit.*, p. 116; Sir Henry Head, *op. cit.*, p. 116; C. von Monakow, *Aufbau and Likalisation der Bewegungen beim Memschen,* Arbeit. a.d. Hirnanatom (Institute in Zurich, 1911, V. 1-37), p. 22; Kurt Goldstein, *op. cit.*, pp. 62-63.

Support for the theory that motor processes may be an extremely fundamental process in symbolic thought formulation is found in the work of a number of investigators. It may even be a more fundamental process, more primitive and basic, to which other processes may be related.

Goldstein and Geld reported a patient with two deep wounds in the occipital region as follows:

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[43] R. A. Krynauw, "Infantile Hemiplegia Treated by Removing one Cerebral Hemisphere," Journal of Neurology, Neorosurgery, and Psychiatry, Vol. 13, No. 4, (November, 1950), pp. 243-267.

[44] W. E. Dandy, "Physiological Changes Following Extirpation of the Right Cerebral Hemisphere in Man," Bull. Johns Hosp., 1933, 53, 31.

> He was entirely unable to recognize words, letters, figures, or pictures exposed for a definite period in the tachistoscope and excused his want of comprehension by the complaint that it was too quick. But when the words were placed before him in the ordinary way, he could read them after long consideration; he seemed to depend for their comprehension on coincident writing movements of the hand. He traced the lines of a letter or diagram, or made minute movements of the index finger before he could arrive at a conclusion; if he depended on vision alone, he was word blind.[45]

Head reports a case who could not write down the alphabet without prompting. "When they (the letters) were dictated, he wrote very slowly, his lips moving silently throughout." Further on he says, "But, in the uneducated and those who suffer from some defective use of language, the words are deciphered and are translated into sound, or at any rate, into movements of the lips, before their meaning is completely apprehended. Moreover, an aphasic may be unable to understand a printed order until he has uttered the words aloud or in a whisper and so reinforced what he has read by a self-given oral command."[46]

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[45] A. Geld and K. Goldstein, "Zur Psychologie des optischen Mahrenhmungs-Erkennungsvorganges," (Zeit, f. d. Gesamte Neurolgo. u. Psychiat., 1918, XLI), pp. 1-142

Von Monakow reports a case who was unable to decipher letters or syllables written by himself; but later, on her good days, she recognized some of them, if she made the movements of copying them with her finger."[47]

Goldstein reports on the retraining in the disturbance of writing, "Tracing on a pane of glass under which the pattern of the letters are placed so that the patient can see and copy them, has proved especially successful."[48]

Wepman describes Fernald's textbook (Remedial Techniques in Basic School Subjects) on the use of kinaesthetic techniques as a means of remedial education for school subjects as an excellently useful and suggestive book also for work with cases of aphasia.[49]

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[46] Op. cit., pp. 248-312.

[47] C. von Monakow, Die Lokalisation im Grosshiru, (Weisbaden, 1941), pp. 473-474.

[48] Op. cit., p. 338.

The literature reporting cases of aphasia brings out clearly the importance of kinaesthetic neural patterns in Symbolic Thought Process (STP) and the means the individual uses in relating all other functions, such as speech, vision, and hearing, to these basic kinaesthetic motor complex patterns.

Symbolic Thought Process (STP) has been related to the Werner-Wapner sensorytonic field theory of perception. We have defined Symbolic Thought Process (STP) as the dynamic process prior. We know that, in addition to perception's being affected by either a kinaesthetic or sensory stimulation, the STP (symbolic thought process) utilizes a basic motor complex pattern in the process of relating to, conditioning of, or development of the other basic sensory processes.

The basic process through which this can be accomplished is covered by Arthur W. Staats in his text on Learning, Language, and Cognition, which demonstrates how the principles of classical and instrumental conditioning are not incompatible but seem to be simultaneously involved in the development and function of the various aspects of language behavior. This should prove to be a fundamental text of outstanding importance for it shows how images are conditioned to words, word groups, and emotional responses; how the unconditioned response can become the conditioned response as well as the reinforcing response; and how this process can be generalized and inter-related in vast complexes, and yet in extremely individualistic ways. The concepts of this text are beyond the scope of this paper. It is quoted since it demonstrates the means by which symbols, images, and emotions can all be related to behavior--or motor complex patterns.[50]

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[49] Op. cit., pp. 181, 193, 200, 205, 230.

It would appear that proprioceptors, or kinaesthesis, are so important that they constitute a sixth sense. Future chapters will continue to develop this concept. The organism can use either a sensory (visual-auditory) or tonic (kinaesthesis) stimulation for perception. However, in building the prior process (symbolic thought) used in the discrimination of the perceptual process, a basic motor complex pattern is fundamental. This places proprioceptors and kinaesthesis in building the "superstructure" in a more fundamental or vital position than sensory stimulation. Thus, we are gaining insight into the entire neural building process. The sixth sense, or proprioceptors, is the invisible, or unnoticed, sense.

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[50] (New York: Holt, Rinehart, and Winston, Inc., 1968), p. 132.

CHAPTER V

THE EXPOSED FOUNDATION

A drunk driver, when stopped by a policeman, may be asked to do a performance test to prove his sobriety. These motor tasks may be walking a white line, balancing on one foot, touching his nose with his eyes closed, and others. The drunk reflects his state of mental confusion through his muscular responses as reflected in his use of his voice, posture, coordination, in addition to the nature of his verbal responses. The officer who has stopped the drunk is aware at a practical level that disorganization in the symbolic thought process will automatically be reflected kinaesthetically in his reactions.

Psychologists and psychiatrists have also designed a number of tests utilizing muscular performance tasks to diagnose emotional problems, intellectual function, and physical changes, such as brain damage. Along the same line, they have designed a number of therapy procedures utilizing motor processes as part of the rehabilitation process.

Basically, most of the tests used are motor performance responses, in that talking and writing are motor functions. The process of forming words and symbolization are motor functions, also. However, there are a number of tests which do not use words as part of the formal test structure, therefore, possibly by-passing our system of thinking, the symbolic thought process. A few of these tests are: The House-Tree-Person Test, the Draw-A-Person Test, the Bender Gestalt Test, the Visual Retention Test, Finger Painting, and the Myokinetic Psychodiagnostic Test.

In particular, some of the rationale back of drawing tests will be discussed briefly, since a number of authorities approaching diverse problems have reached similar conclusions as the writer of this paper. This section is not, in any way, meant to cover all the latest research or experimentation in the field, but only to cover the basis for such tests.

In this regard, Wyatt states, "in drawings, a deeper, more primary and less differentiated level of experience are tapped."[51] Ballak and Symonds have also pointed out that drawing techniques tap deeper layers of personality than the verbal projective techniques. These experts seem to be saying that performance may involve deeper psycho-physical relationships than just verbalizations, and that samples of performance may be more closely related to total behavior patterns of the individual.[52]

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[51] F. Wyatt, in J. Bell (Ed.) The Case of Gregor; Interpretation of Test Data, J. Proj. Tech., 1949, 13, 1949, 13, pp. 155-205.

The drawing technique may further be on a level with primitive pictorial thought. M. Stern, in "Free Painting as an Auxiliary Technique in Psychoanalysis," says,

> It is of advantage that thus, both as to the mode of thinking and of expression, it (drawing) is on the same plane as the unconscious thought itself. . . . It seems that effect emanating from a picture reaches into the unconscious more deeply than does that of language due to the fact that pictorial expression is more adequate to the developmental state in which the trauma occurred; it has remained more within the range of the concrete and physical than has the verbal expression.[53]

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[52] L. Bellak, "Comments at Society of Projective Techniques Meeting," New York Psychiatric Institute, Jan. 15, 1953. P. Symonds, "Comments at Society of Projective Techniques Meeting," New York Psychiatric Institute, Jan. 15, 1953.

[53] In G. Bychowski and J. Despert (Eds.), Specialized Techniques in Psychotherapy (New York: Basic Books, 1952), pp. 65-83.

Emanuel F. Hammer would seem to confirm these contentions when he says "To further compare projective drawing with the best known of all projective techniques, the Rorschach, it may be pointed out that drawings tap predominantly effector (outgoing) processes whereas the Rorschach taps predominantly perceptual (incoming) processes. The effector acting out, the carrying through of adjustment potentials is somewhat more vulnerable to the effects of psychopathology than are the perceptual processes."[54]

L. Zucker also believes that drawings are an extremely sensitive instrument and he maintains that "drawings are the first to show incipient psychopathology and here its prognostic use is underscored, and the last to lose signs of illness after the patient remisses. . . . Drawings are more sensitive to psychopathological trends than are the other projective techniques."[55]

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[54] "The Role of the H-T-P in the Prognostic Battery," J. Clinical Psychol., 1953, 9, pp. 371-374.

[55] "A Case of obesity; Projective techniques before and after treatments." J. Proj. Tech., 1948, 12, pp. 202-215.

Gordon W. Allport states in Myokinesthetic Psychodiagnosis

> Modern dynamic psychology easily incorporates projective methods, but up to now has had little place for expressive methods. The reason, it seems to me, lies in the dazzling promise that projective methods will somehow uncover the "unconscious," and thanks to Freud we have plenty of knowledge and hypotheses about the unconscious. But what do expressive methods show? Where is the theory that will help us to interpret individual differences in gesture, posture, handwriting, gait, facial expression, styles of laughter, handshake, and vocal inflection? We know vaguely that these individual motor signatures reveal much - in everyday life we rely on them heavily - but psychologists, at least in America, shy away from this important area of study. . . . They do so partly because they lack clear-cut theories to guide research; partly because of a lingering aura of charlatanry that hovers over graphology and physiognomy; and partly because studies in this area are difficult to execute.
>
> One obstacle to studying expressive behavior is the fact that (with the exception of handwriting and other graphic records) it is fugitive and hard to capture; and furthermore it is difficult to separate the expressive aspects of movement from the adaptive aspects. While the signature of individuality is surely present in every motor act, the act itself is likewise controlled and rectified by one's intentions (by one's effort to cope or communicate). It is rectified and influenced also by cultural convention and constraint, by visual and other sensory cues that tend to keep the expressive impulses within bounds, and by feedback

from the observer that results in socialized and redirected movement.[56]

A test which attempts to measure expressive movement is the Myokinetic Psychodiagnostic Test, by Emilio Mira Y Lopex. The subject is asked to trace a few meaningless lines. (This minimum of adaptive instruction is needed to start the subject off.) All visual cues are then removed and the subject continues the drawing blindly. There are no cultural conventions to guide the task. The subject makes no language responses, thereby avoiding this powerful influence toward the conventionalization. There is no feedback, no knowledge of right or wrong. The test leaves impulsivity virtually in full command, though it likewise measures the control the subject tries to exert over his temperamental impulses. An important feature of the test is its comparison of the drawings made by the dominant hand with those made by the non-dominant hand.

Mira has this to say about the principle of

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[56] (New York: Logos Press, 1958), Foreword, pp. XIII to XV.

Myokinesis:

> Psychological space is not neutral. Every movement acquires, in addition to its mechanical effect, a particular significance according to the way it is executed . . . every mental activity comprises a succession of actions performed on the basis of previous attitudes. Each change of conduct requires a change in pre-existing muscular tension and alters its equilibrium formula. Psychic instability and myokinetic instability are two extreme aspects of the same individual process. . . . Accordingly, disturbances of psychic tensions should be transferred into the domain of muscular movement, provided we can eliminate the voluntary corrective motor actions of the subject.[57]

Allport, in his Foreword to the above volume, states clearly that there is a basic quality to motor behavior of every individual and that his signature is surely present in every act.[58]

Bellak-Finn-Small-and Bishop, in their joint Editors' Preface on Mira's tests state, "He beings with the assumption that psychic activity is communicated into somatic activity, specifically into skeletal muscular tonicity. . . . More than anything we believe that by adding an expressive-motor diagnostic technique to the psychologists' armamentarium, the efforts to discern the Analagen of personality have acquired a potent ally."[59]

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[57] Emilio Mira Y Lopez, Myokinetic Psychodiagnosis (New York: Logos Press, 1958), p. 9.

[58] Allport, Foreword, op. cit.

The various individuals mentioned in the preceding paragraphs have stated that motor processes are basic and are a means of ascertaining the underlying behavioral structure of the individual by obtaining an "uncontaminated" sample of the motor pattern. This is a somewhat similar conclusion indirectly reached by the investigators of Aphasia who also found motor patterns an extremely important part of HOW the individual's patterns of symbolic thought processes were formed.

These primary motor patterns seem to be at a lower level and have a basic integrative formative process as distinguished from the individual's perception, which can have either a sensory (visual-auditory) or tonic (kinaesthetic) stimulation. In other words, it is a basic neural pattern used in forming the individual's system of symbolic thought process as distinguished from the process itself.

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[59] Leopold Bellak, Michael H. P. Finn, Leonard Small, Frances Bishop, Editors' Preface, Emilio Lopez, op. cit., pp. xvii-xx.

The proprioceptors in the smooth muscles may be much more important than suspected previously because their function goes on largely unnoticed in a route directly to the lower brain centers. It is a basic foundation upon which the structure is built, the structure being the symbolic thought process; the STP being the prior dynamic process through which stimulation takes place--the neuropsychological entity. The proprioceptors are the building blocks in the neuropsychological entity, but are also co-partners in the perceptual process, or the neuropsychological entity.

The evidence which substantiates the fact that the proprioceptors are in reality so important to man that they constitute a sixth sense is still accumulating and building. Their importance has been ignored largely because of their un-noticed function, their smooth and efficient performance, and the fact that they are so basic and important to the human being in his successful involvement with his environment. They are taken as much for granted as our blood's flowing through our veins. They remain un-noticed until there is a malfunction in the process.

CHAPTER VI

ACTING OUT

The drunk who has had too much to drink may need to be sobered up. His friends may walk him briskly in the cold air. They are using a motor process to help clear up his symbolic thought process. It is a therapy procedure of sorts. If it is combined with a lot of black coffee he may end up by being an alert drunk instead of a sleepy one.

A process of acting our physically, or the use of behavior to change one's feelings, has been a new concept developed in psychotherapy by Glasser.[60] In an over-simplification of this process, the client is urged to change his behavior in order to change his feelings. A very depressed person is inwardly directing his hostility against himself; he feels unworthy, and lacks feelings of self-respect. If he starts to do constructive things he has put off, avoided, needs to do, or feels guilty for not doing them, he will begin to like himself a little more. As a direct result of his actions or a change in his physical behavior, he will begin to like himself more and gain an additional amount of self-respect. It follows, then, that he will be less depressed.

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[60] William Glasser, Reality Therapy (New York: Harper and Rowe, 1965), pp. 5-165.

Freudian psychoanalysis recognizes a form of "acting out;" however, in this regard, it has a negative connotation. Clients in therapy may act out in order to avoid feedlings as a form of resistance. Even as a life pattern, chronic liars continue to lie as a means of avoiding feelings of depression or hostility.[61]

Psychodrama is another method of therapy that encourages full body participation in acting out conflicts and emotions. In this case, the therapist has the job of reintegration of symbolization. Masserman states:

> Properly used, they can provide highly meaningful modes of personal interaction in patients who might be as readily accessible in no other way. In fact, they tap what Jurgen Ruesch has called nonanalogic communication, such as is established

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[61] Jules H. Masserman, The Practice of Dynamic Psychiatry (Philadelphia: W. B. Saunders Co., 1955), p. 621.

> with deep and permanent significance through ACTS AND GESTURES between the infant and its environment long before the growing child has learned the analogic use of words and symbols.[62]

Masserman recognizes the importance of motor patterns in the symbolic thought processes. He seems to feel they are a short-cut to the subconscious and to the underlay of the entire structure of the symbolic thought process.

Play therapy technique, as described by Axline,[63] is a method by which children are encouraged to act out or play kinaesthetically with FULL BODY PARTICIPATION, their emotions, conflicts, and anxieties. The children have not yet built their symbolic thought processes to an extent necessary to express verbally their emotional conflicts but have to act them out in play. The therapist changes or builds more adequate and realistic systems of symbolic thought processes through conditioning or reconditioning. She creates a favorable emotional environment for the child to work through his conflicts with appropriate feedback from the therapist.

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[62] Virginia Mae Axline, Play Therapy (Cambridge: Houghton Mifflin Co., 1947).

Axline seems to be describing the drive for the development of symbolic thought when she says,"The BEHAVIOR of the individual at all times seems to be caused by one drive, the drive for complete self-realization. When this drive is blocked by pressures from without, the growth toward this objective does not stop, but continues with increased momentum because of the generative force of the tensions that are created by the frustrations."[64] Behavior, symbolic thought formulation, and emotional problems have a one-to-one relationship, married in a tight union, inseparable in process. Parenthetically, we can begin to have an awareness of the problems developing in a child who is unable to read and is utilizing a learning pattern inappropriate to his needs.

Occupational therapy is a kinaesthetic process for keeping idle hands busy. It also rebuilds concepts of self worth, accomplishments, and relates reality directly to muscular activities. Johnson states:

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[64] Ibid.

> Psychiatrists discovered that patients in mental hospitals are variously confused, disoriented, deluded, out of touch with reality. They long ago learned that their main task in treating such patients is that of somehow getting them to face reality and to deal with it objectively. They have found, for instance, that many of the patients can be helped significantly through what has come to be known as occupational therapy. This is a name for being busy with one's hands at a job that requires one to deal directly with facts or materials of some sort in a systematic organized way with more or less significant results.[65]

Occupational therapy, through the use of muscular activities, is another direct means of integrating the symbolic thought process to reality, by acting out physically in performing tasks.

Watkins recognizes the importance of kinaesthesis in therapy in changing the symbolic thought process. In hypno-therapy he has the patient kinaesthetically act out the conflict or emotion to bring about TOTAL BODY PARTICIPATION. He further states:

It is often possible through abreaction to

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[65] Johnson, op. cit., p. 175.

> to permit the patient to project out deep seated, repressed hostilities toward father, mother, wife, brother, sister, or friend. . . . Abreative sessions will be most valuable if the therapist will prod by dramatic and emotional suggestions the most THOROUGH PARTICIPATION OF THE ENTIRE PATIENT PHYSIOLOGICALLY. It is quite possible that many of the reported failures of abreaction to cure (both hypnotic and narco-synthetic abreactions) have been due largely to inadequate attention to the two fundamental points of TOTAL PARTICIPATION AND SUBSEQUENT REINTEGRATION. Merely sticking pentothal or hypnosis into a man's arm is not enough.[66]

Watkins develops a strong case on the importance of kinaesthetic factors in the creative change of Symbolic Thought Process. Some individuals fail unless they can act out, physically, their emotions and feelings. The importance of kinaesthesis, or the use of the proprioceptors, cannot be overestimated. It is as if there were a pipeline that can circumvent the structure and enter directly into the center, or core, of the process.

In the induction of the hypnotic state, Watkins also effectively uses two methods of inducing the hypnotic state, both using propriocepter stimulation. One is a moving kinaesthetic method of having the patient sway back and forth, the other is a kinaesthetic catalepsy in which the eyes concentrate on an object. Neither method is equally effective with the same people. One method is effective with some, while the second method is not. Obviously, there are individual differences in the utilization of proprioceptors and neural mechanism.

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[66] John G. Watkins, Hypnotherapy of War Neuroses (New York: Ronald Press, 1949).

The importance of the use of proprioceptors in hypnosis has been emphasized by Verdier,[67] who stated that most hypnotists use, in one form or another, proprioceptor stimulation in inducing the hypnotic state. He feels proprioceptors excite the subcortical part of the brain which results in less inhibitive action of the cortex. One of the functions of the cortex is inhibition or delaying of responses. As a result, proprioceptive stimulation can circumvent the inhibitive functions of the cortex, concentration is increased and learning vastly enhanced. It is the action of the smooth muscles (volunteer muscles) that cause the hypnosis. Although Verdier is relating this process from his frame of reference of hypnosis and the hypnotic state, the implications for education are enormous. We may be entirely failing to utilize the most effective means in the educational process, proprioceptor stimulation. Again, the unnoticed function of this type of stimulation is emphasized.

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[67] Paul A. Verdier, President of the California Hypnosis Association, in a lecture at the California Graduate Institute in West Los Angeles, California, on November 27, 1969.

We can begin to see continual confirmation of a pattern--like pieces in a jigsaw puzzle that singly do not necessarily means much, but when put together, form a clear picture. Proprioceptors are the fundamental basics in learning and perception. They may be the very frame upon and through which symbolic thought processes are built.

Relating this again to the Werner-Wapner Sensory Field Theory of perception, the dynamic process prior to both (stimulation by visual-auditory or kinaesthesis means) is the Symbolic Thought Process, which constitutes a separate and basic drive to the human organism. A basic neuropsychological process by which this can be built is by proprioceptor stimulation--the sixth sense. We find confirmation in this again in psychological and psychiatric techniques in dealing with emotional and behavioral problems.

Since the base and background have been established, we are now ready to look at some of the educational results reported in literature, probably anticipating what some of these results may be.

CHAPTER VII

THE FEMINIZATION OF MEN

It was suggested in the introduction to this paper, that the reason normal students fail to learn to read could be in our bi-sexual approach to the educational process, and that the solution was clouded behind our present means of looking at the problem. It appears that it may be much more serious than that. Schools have tried to hammer, pound, and force boys into a feminine pattern of learning and have disregarded the most effective means of an educational approach for both sexes--stimulation of the proprioceptors and simultaneous conditioning of the other senses with this basic neural mechanism. We are not yet aware of the possible chaos, emotional damage, loss of brain power, and anti-social forces produced in our present methods of teaching.

Two noted educators, Neil Postman and Charles Weingartner, have this to say about the curricula of schools--especially those most single-mindedly pursuing the "intellect": "they do not seem to recognize the fact that boys are different from girls. This is exceedingly odd, since almost everybody else has noticed the differences. For example, the curricula of many urban schools do not reveal any awareness of differences between white, middle class children and black, non-middle-class children. And the price we all pay for this omission is incalculable."[68] It is just possible that these individual differences are important.

These two educators[69] quote Plato as saying, "in order for education to accomplish its purpose, reason must have an adequate emotional base."

Sex is certainly emotional. Yet, no sex differences are considered in our present educational system. Methods haven't changed much since the days of Plato. (An instructor with students taking notes--a visual-auditory basis.)

The concept of a 100% literacy is a requirement of a modern democratic society. It is becoming a necessity in the increasing technical scientific nature of today's fast-moving world. Inappropriate or inadequate methods didn't matter in the past. If a person couldn't or did not want to learn academically, there was always the sea, new frontiers, farming, soldiering, or hundreds of other creative outlets available to keep an individual gainfully employed. This is no longer true. In the United States, a non-reader has difficulty operating a motor vehicle. It is difficult for him to pass the driving tests, in reading road signs, and in obtaining a job financially rewarding enough to pay for the car, insurance, and operating costs.

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[68] _Teaching as a Subversive Activity_ (New York: Delacorte Press, 1969), page 84-85.

[69] _Ibid_., p. 84.

Techniques in teaching reading are needed which will enable any "normal" individual to obtain these skills. This is a very necessary extension of our symbolic thought process and part of our thinking and behavior. Learning theory in psychology and education have left some gaps and have not directed us to the solution. This has been pointed out indirectly by Ernest R. Hilgard, in Theories of Learning, Second Edition, who states:

> Some definitions of learning avoid the problem of performance by defining language as a change in

> the central nervous system. So long as this change in the nervous system persists, temporary changes in state, such as those in fatigue and intoxication, affect performances but not learning. This definition asserts that learning is an inference, but goes on to make a particular sort of inference about the role of the nervous system in learning. In view of the lack of knowledge of what actually does take place inside the organism when learning occurs, it is preferable NOT TO INCLUDE hypothetical neural processes in the definition of learning. We know that learning takes place. We should be able to define what we are talking about without reference to any speculation whatever. This position does not deny that what we are calling _learning may be a function of nervous tissue_. It asserts only that it is not necessary to know anything about the neural correlates of learning in order to know that learning occurs.[70]

The statement that it is not necessary to know anything about the neural correlates of learning in order to know that learning occurs is a serious psychological and educational limitation in establishing methods and means. It might be compared to a man who buys all the plans, furniture, and accessories for the interior decoration of a home he has never seen before. He might find out later that he cannot use most of the furniture and accessories.

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[70] (New York: Appleton-Century-Crofts, Inc., 1956), p. 5.

In this paper, research from the various scientific disciplines have been combined. Sex differences were found to be significant in perception and learning. This was related to the known neural mechanisms. As a result, we can now look to the literature with an awareness our educational system has not taken sex differences into consideration in methods or approach.

In practice, most instruction in the elementary schools has a visual-auditory (a feminine learning pattern), or visual-phonic, approach to the learning of reading skills.[71] We would expect such a program to have reports of difficulties. The attempt to feminize men in their learning patterns should have an impact emotionally as well as result in a frustration or difficulty in learning achievement. As there is always a message carried in the method, we may wonder what impact this has had on females by suggesting that there are no fundamental differences.

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[71] Clifford J. Kolson and George Kaluger, Clinical Aspects of Remedial Reading, op. cit., p. 6.

There is a long and continuing list of reports pointing out sex differences in developing reading skills. Some of these are discussed in the following paragraphs. It would be impossible to cite examples of all of the investigations, but, as they are consistent and cover a long period of time, a few of them will be discussed.

Clara L. Alden, Helen B. Sullivan, and Donald D. Durrell tested the reading achievement of 6,364 children in grades two through six. The children lived in twenty communities in eleven states. They found about twice as many boys as girls were retarded one or more years. This amounted to 18.6 per cent of the boys and only 9.6 per cent of the girls. This striking difference carried right through from the second grade through the sixth.[72]

Grace M. Fernald, reporting on her experience at the UCLA Psychology Clinic over a period of years with learning cases, stated that less than 2 per cent of the 100 per cent non-readers were girls.[73]

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[72] "The Frequency of Special Reading Disabilities," Education, Vol. IXII (September, 1941), pp. 32-36.

M. Monroe, reporting on 415 children with the reading difficulties referred to the Institute for Juvenile Research in Chicago, found that, of the general clinic cases who were found incidentally to have reading difficulties, 84 per cent were boys, and 16 per cent were girls.[74]

Phyllis Blanchard states that reading disabilities are far more common among boys than girls and that statistical studies indicate that 80 per cent or more of the children with disabilities are boys. She further states that the child with a reading disability typically is of average or superior intelligence able to achieve an I.Q. of 90 to 150 (or more) on oral intelligence tests, such as the Stanford Binet.[75]

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[73] Certain Points Concerning Remedial Reading as it is Taught at the University of California (Education, March 1947), Reprint, p. 16.

[74] Children Who Cannot Read (University of Chicago Press, Chicago, 1935).

[75] "Psychoanalytic Contributions to the Problems of Reading Disabilities," in The Psychoanalytic Study of the Child, Ed. by Anna Freud and others, Vol. II (New York: International Universities Press, 1947), p. 163.

Frances Bentzen reports that pathologic conditions, including learning and behavioral disorders, are THREE to TEN times more frequent among males than among females of the same chronological age. Probably the most familiar example of the uneven ratio appears in reading disabilities. Kopel and Geerded's study of clinics reporting reading disabilities by sex found that 78 per cent of all referrals were male, and that, in the case of mentally retarded children with associated reading disabilities, 94 per cent were boys and 6 per cent were girls.[76]

Samuel Weintraub, in his article "Sex Differences in Reading Achievement," reports on a study done by Anderson, et al, on the average girls learned to read more than six months earlier than boys. Gates' suggestion that there may be an environmental factor operating receives strong support from a study reported by Preston in which the reading achievement of German and American children was contrasted. While the means of American girls exceeded those of American boys at both grade levels studied, grades four and six, the reverse was true in the German sample. Preston notes that teachers in Germany are predominantly male and the preponderance of male teachers may be a part of a total cultural pattern which reflects greater emphasis on reading and learning as a masculine activity (or males have a tendency to present material on a basis more suitable to masculine patterns). A comparison by grades is misleading. Children having difficulty are often set back, drop out of school, and go to a private school or instruction.[77]

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[76] "Sex Ratios in Learning and Behavior Disorders," American Journal of Orthopsychiatry, 33 (1), (1963).

Frances Bentzen, as reported in a previous paragraph, related learning and behavior disorders together. As behavior is directly related to and an expression of our symbolic thought process, we find that the reports in the past confirm this sex difference. Frustration or threat to the symbolic thought process should produce behavioral disorders.

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[77] Reading Teacher (1966), 20 (2), pp. 157-159.

N. Fenton and R. Wallace, in a study of 1,660 cases referred for clinical help to the California Bureau of Juvenile Research, found three times as many boys as girls in this population. The ratio of boys to girls reported for delinquency was 4.5 to 1; for behavior problems, 4.4 to 1; for personality problems, 2.6 to 1; for difficulty with school subjects, 2.6 to 1; and for mental diseases, 2.3 to 1.[78]

B. S. Alper and K. E. Logdon found that, of 3,281 children who had passed through the course of sixty Pennsylvania Counties on charges of delinquency and incorrigibility, 77.2 per cent were boys, and 22.8 per cent were girls. This was a ratio of more than three to one.[79] Eleanor and Sheldon Glueck, in discussing their findings on delinquency, stated: "The delinquents as a group have a general tendency to mesomorphy. They tend toward the outline of a solid, closely-knit, muscular type. A much higher proportion of the delinquents than of the non-delinquents were extremely restless as young children, in terms of energy output. . . . The delinquents tend to express themselves intellectually in a direct, immediate, and concrete manner rather than through the use of intermediate symbols and abstractions."[80]

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[78] "Child Guidance in California Communities," Journal of Juvenile Research, (1937, 21), pp. 135-179.

[79] "The Delinquent Child in Pennsylvania Courts," Mental Hygiene (1936, 20), pp. 598-604.

We can begin to wonder about our cultural approach to males and young boys in forcing them into feminine learning patterns, that is, the more masculine boys. In this regard, the study of Eugene and Ruthe E. Harley, in their book Fundamentals of Social Psychology, is important. They report the following:

> On the basis of a ten-year study of 200 delinquent boys at the Hayden Goodwill Inn, a rehabilitation home for boys in Boston, Sheldon found a definite variation in the somatotype distribution of the delinquent group compared with the somatotype distribution of the 4000 college students. . . . All of the members of the group were very high in mesomorphy, extremely low in ectomorphy, and low in endomorphy. . . . Sheldon's conclusion of the primacy of cause in

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[80] Unraveling Juvenile Delinquency (Cambridge: Harvard University Press, 1950).

> the germ plasm is a bit impetuous. Rather it seems possible that an individual of this type has such a great need for outward and kinaesthetic aggressive physical activity that he will be put under tremendous stress by the usual restraining influences of modern living. It is in an attempt to overcome this restraint that the individual becomes delinquent.[81]

Hartley and Hartley recommend a re-evaluation of some of the theories of recreational and activity programs as a means of dealing with the problem. However, of even greater significance would be the re-evaluation of educational methods which may be a primary cause, let alone not furnishing an outlet for achievement and accomplishment which might help eliminate some of the energy of frustration. Hostility could then be directed into creative outlets rather than destructive ones.

Difficulties in speech, particularly stuttering, we see the same pattern evidenced as in all problems for the male in symbolic thought processes. Robert West, reporting in The Pathology of Stuttering - Speech Therapy, states the following, "Perhaps one of the most important pieces in our puzzle is a sex difference in the incidence of stuttering. The ratio of stuttering in boys and girls above thirty-six months varies all the way from 3:1 to 8:1, depending upon the respective ages. Very few adult females stutter. *It is obvious, therefore, that our ultimate explanation of the fundamental nature of spasmophsmia will be one that relates stuttering somehow to the condition of maleness*. . . . If the stuttering were tied up with the reproductive aspects of sex we should expect the difference in its incidence to be greater during puberty and adolescense than at any other time of life, and we should expect stuttering to being with the onset of puberty. Such is not the case. Again we are led to infer, therefore, that the difference between the stutterer and the nonstutterer *is not in the secondary aspects of sexual nature, but in something much more basic and fundamental*."[82]

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[81] (New York: Alfred A. Knopf, 1952), p. 349.

It seems to be clearly evident that results all lead in the same direction whether we are discussing reading, behavior, or speech. All have the same common denominator--impairment in the expression of symbolic thought processes. The ratios vary according to the investigator, the particular age group, or the sample, but remain anywhere from 3:1 to 10:1. This is expected and conforms to the theoretical basis of this paper.

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[82] (A Book of Readings Edited by Charles Van Riper) (New York: Prentice Hall, 1953), p. 46.

Our culture and our educational process in treating boys the same as girls is paying a tremendous price. We need to emphasize the difference rather than try to create a blending of the sexes. We are forcing boys into a female learning pattern,[83] disregarding sex differences in the formation of symbolic thought and ignoring the use of the proprioceptors in the learning process--the most effective means of learning and education to both the sexes--boys and girls.

In having one of my colleagues proofread the paper, he stated that this is one of the most obvious cases of academic overkill he had read. This may be

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Witte, *op. cit*.

true. However, the educators are so laden with preconceptions that it is practically impossible to introduce an idea that does not fit into traditional categories. The educational establishment has built-in mechanisms for its self-perpetuation. (Sometimes old authorities don't fade away, they just shout louder.) The problem of ignoring sex differences in education is of such magnitude, however, that help will be needed from all levels to effect any changes.

We must prevent the further feminization of men in our culture by not trying to build up the process of symbolic thought functions through feminine learning patterns. We need to change entirely the methods of teaching reading in the first years of our elementary schools. The first step is in the classroom.

Teachers in our school system pride themselves on the quiet schoolroom. This is supposedly a measure of the discipline and therefore an indication of how much education is taking place. I remember, however, that, during a trip to Japan during the Korean War, I visited a Japanese classroom and noticed how different it was from an American classroom. The Japanese students were all talking as they were learning the Kanji (Japanese characters representing words). By American standards the classroom was noisy. In fact, the children were conditioning the verbal sounds to the words they were writing. The muscular process of speaking was also a reinforcement to learning and, at the same time, became a conditioned response. The Haskins group [84] indirectly confirms this procedure when they suggest a "motor theory of perception" in which "the recognition of a particular sound pattern as one phoneme or another comes, after considerable practice, to be cued directly by the neural surrogate of articulation rather than the acoustic stimulas per se." American classrooms need to have organized noise as a measure of just how much learning is taking place in the classrooms, rather than demonstrating how quiet and orderly they can be.

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[84] Paul R. Farnsworth, Olgar McNemar, and Quin McNemar, Ed., Annual Review of Psychology (Palo Alto, Calif.: Annual Reviews, Inc., 1966), p. 448.

The Visual-Auditory-Kinaesthetic-Tactile approach[85] (The Fernald Method) is a means of utilizing all the senses, including the two components of kinaesthesis (lip-throat and hand-motor) in the school learning situation. It is particularly adapted to the differences in learning needs, for children with emotional problems and children with brain damage. Kolson and Kaluger[86] recommend the Fernald Method in all cases of primary disability, i.e., those cases which will not respond to any other method. They feel one disadvantage of the system is that it is time-consuming for the teacher. However, it is this writer's experience that the Fernald method with younger children actually enhances learning and lessens the teaching load in the long run. In view of this fact, it allows a feminine or masculine approach, according to the needs of the individual, making it an invaluable tool. It is particularly sound from conditioning theory in that it simultaneously conditions all the five senses to a basic proprioceptor neural pattern and does not require any visual imagery.

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[85] Clifford J. Kolson and George Kaluger, Clinical Aspects of Remedial Reading, p. 19.

[86] Ibid., p. 19.

The Fernald technique is different from the procedures presently used in most schoolrooms in the following ways:

> 1. Kinaesthetic, auditor, tactile, and visual cues are given simultaneously so that no matter what system the individual child uses in neural integration, the other processes can be automatically inter-related by the process of conditioning. This would not be possible without the simultaneous use of all cues.
>
> 2. The child actually traces with his finger, saying the syllables out loud as he traces them to learn words for both reading and writing. The process is continued until neural integration takes place and tracing is not required.
>
> 3. The child never copies words in learning to write, read, or spell. The habit of recall as well as association is developed by requiring that each time the word is written, it is done so by memory. The word is said out loud by syllables simultaneously when being written.
>
> 4. The child never prints. He starts immediately to write the whole word, after tracing, if it is needed, to get a "feel" of the word. After writing the word or a short-short story, it is immediately presented to him in the

printed form. He is able to read his own book. Books presented to him to learn to read, are always at his age level of understanding - never lower.

5. The alphabet is never taught separately. It is learned in usage and from filing the traced words he has learned in a special box. He learns the sounds of the letters from their usage.[87]

The technique is simple, basically, but the difference in results is revolutionary. It allows a free choice in learning. You can follow a masculine or feminine learning pattern. Dr. Fernald has yet to receive the recognition she deserves for her brilliant contribution to learning in education. It is not just a remedial technique, but an innovation in learning patterns; the first radical departure or invention in learning procedure since the ancient Greeks.

The ramifications of considering the cultural approach to education--in particular, learning techniques as they affect personality development and behavior--have not yet been investigated. It is critical that we do so now for the medium is the message. The phrase, "the medium is the message,"[87a] implies that the invention of a dichotomy between content and method is both naive and dangerous. It also implies that the critical content of any learning experience is the method or process through which the learning occurs. Almost any sensible parent knows this, as does any effective top sergeant. It is not what you say to people that counts, *it is what you do to them*.

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[87] Fernald, Remedial Techniques, op. cit., pp. 73-82, 33-55, 70-82, 90-92.

We are forcing boys and girls to respond in the same way by using the same methods in the formation of the symbolic thought process--this vital drive in human beings which is so important to personality, thinking, and behavior. We are ignoring also the most effective means of learning, proprioceptor stimulation. What is this message we have been forcing so strongly on our children?

[87a] Postman and Weingartner, *op. cit.*

CHAPTER VIII

THE MARRIAGE OF MIND AND BODY

The ancient Greeks emphasized perfection in the human body as well as in the pursuit of the intellect and basic truths. The Olympic Games as we celebrate them today originated in ancient Greece. Was this combination of physical perfection and great intellectual attainment an accident?

According to the hypothesis of this paper, there is a drive for symbolic thought in human beings that has a motor complex pattern as its basis, proprioceptor stimulation being the neural building block upon which the other senses are conditioned or interrelated. We should be able to find some confirmation about this physical or kinaesthetic theory in the study of gifted children.

Witty states as follows: "Studies of all these groups of children show that the traditional school curricula are ill adapted to their special needs. These very bright children are SUPERIOR to their classmates of similar ages in size, STRENGTH, NEURO-MUSCULAR

CONTROL, AND IN GENERAL HEALTH . . . the bright child typically is not a physical weakling."[88]

We can begin to suspect that when we find superior athletic and neuro-muscular skills in an individual, there may be a potential for intellectual functioning at a superior level if a muscular pattern of learning is utilized. (Of course, we cannot disregard motivation, values, and vocational interests.) This concept may give us new approaches to minority groups in learning problems and concepts of intelligence. Mind and body cannot be dichotomized, set apart by definition, because this is just not true, neurologically. In fact and in function, the mind is a part of the body and the body is a part of the mind. Motor processes are an integral part of the formation of symbolic thought, the means of thinking and conscious control of behavior. The need for a concept of the Symbolic Thought Process is evident because it combines both mind and body in function and gives us a needed tool when we investigate other questions. The very use of symbols, although essential to the thinking process, can also set up blocks by employing relationships or limits that do not exist.

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[88] Paul Witty, "Intelligence: Its Nature, Growth, and Measurement," Chapter 5, Educational Psychology. Charles E. Skinner, Ed. (New York: Prentice-Hall, 1951, 3rd Edition), p. 186.

Girls generally learn to talk earlier than boys. One explanation of this fact, from the Symbolic Thought Process frame of reference, is that muscular neural relationships are much more important to boys than girls. There may be more to develop, a larger distance to cover, and therefore development in the final result takes longer. This also might explain "late bloomers," individuals with great talent which becomes evident at a somewhat later time.

Although intellectual and vocational skills are important, according to the STP frame of reference, we may have found new ways of looking at the formation of emotional difficulties. This blocking, distortion, frustration, or threat to the STP would automatically means difficulty to an individual. Fernald has this to say on this subject,

> The child who fails in his schoolwork is always an emotional problem. . . . It is difficult

> to imagine a more serious case of blocking of a great desire. Thus the failure to learn is one of the conditions that result in emotional instability. Since school is the first group experience for most children, these negative emotions become connected through conditioning with the group, with the members that make it up, and with group activities. So we find the child either tending to withdraw more and more from the group and assuming a fearful or antagonistic attitude toward it, or compensating for his failure by bullying or showing off.[89]

Here, Fernald is clearly stating that, at the roots of anti-social behavior the frustration of the symbolic thought process is creating a great problem in the behavioral mechanisms of the individual and for society. The educational process itself, or its method, may be a cause of serious emotional problems and, therefore, a cause of juvenile delinquency. We have been looking everywhere else and have disregarded this method, assuming it to be neutral.

As for cultural sex characteristics, we need to know more about the development of the individual who follows the opposite sex in his learning pattern.

In the development of emotional problems, we know that frustrated behavior takes place when an individual is forced to make responses in a situation where is he already emotionally frustrated. The extent of this threat is determined by the basic functions of the goals involved. Norman R. F. Maier, in his work entitled Frustration, introduces an additional insight into frustrated behavior when he says, "The distinction between frustration-instigated behavior and goal-motivated behavior also was found to permit a new type of conflict, a conflict between these two behavior processes. It was suggested that this type of conflict operates in states of anxiety."[90]

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[89] Fernald, Remedial Techniques, op. cit., p. 7-8.

Heinz Werner and Symour Wapner, continuing on the subject of the development of emotional problems, state:

> The concept of the organism as a whole should not be given lip service, but should be taken seriously. Schilder makes use of the concept of hierarchical organization of the person in his interpretation of psychopathological cases where there are signs of disturbance or primitivation of Motor and Tonic functions. In cases of this sort

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[90] (New York: McGraw-Hill Book Co., In., 1949), pp. 159-163.

> such as hysteria and schizophrenia, there can be a postulated linkage between the symbolic projective level and a primary level of skeletotonic and viscertonic activities.[91]

M. A. Sechehaye, in his book Symbolic Realization, makes a direct reference to symbolic thought in presenting the case history of a cure of schizophrenia when he states that it was a matter of symbolic realization and that these symbolic realizations not only brought relief to the patient, but they gave her contact with reality.[92]

In the treatment of emotional problems, it may also be true that greater use of the proprioceptors should be made. Learning may be greatly enhanced and we may have a direct pipeline to the symbolic thought process.

Eugene Bleuler, in describing the accessory symptoms of schizophrenia, says "Illusions and hallucinations of the kinaesthetic senses or the vestibular organs are usual in the back group of the clinical picture. . . . Of course, one cannot offhand connect the auditory hallucinations with hallucinations of the muscle senses of the organs of speech. However, hallucinations do deserve more thorough study. . . . The external clinical picture of these forms (catatonic) can be best described by two extreme types which correspond to Wernicke's akinetic and hyperkinetic motor psychoses."[93]

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[91] "Sensory-Tonic Field Theory of Perception," Perception and Personality, a Symposium, Ed. by Jerome S. Bruner and David Drech (Durham, N. C.: Duke University Press, 1950), pp. 103-104.

[92] (New York: International Universities Press, Inc., 1951), p. 141.

Mind and body cannot be separated. Emphasis of this point is made by Hudson Jost and Marion Jurko, who say "In a second study, a group of psychoneurotic and early schizophrenic patients were compared with a control group in their reaction to the Rosenzweig Picture-Frustration Test. The control group responded more in the galvanic skin response and blood pressure areas, the psychoneurotic group responded in all areas measured, and the schizophrenic group responded primarily in the blood pressure, respiratory, and skeletal areas."[94]

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[93] Dementia Praecox or the Group of Schizophrenias (New York: International University Press), p. 101.

With the concept of the symbolic thought process constituting a basic drive of the organism, combining the principles of mind and body into a neuropsychological entity, we have a new tool for analyzing intelligence, vocational and intellectual skills, and emotional problems. We can eliminate the difficulties encountered in our own thinking process or the limitations placed on us by our own concepts. Thinking of intelligence as part of a motor process as well as an intellectual, or "mind," function is difficult at first, but without repeating the neurological basis for this conclusion, our own reasoning will convince us of its validity. We say again, the mind is body and the body is mind. There is no way of separating them as to their functions. They are inter-related and married in an inseparable union--a marriage without the possibility of divorce.

This concept opens up a whole new avenue in the analyzing and understanding of human behavior, emotional responses, and intellectual functioning.

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[94] "Levels of Energy Discharge," Human Development Bulletin, 5th Issue Proceedings of the Third Annual Symposium. A publication of the Human Development Student Organization under the sponsorship of the Committee of Human Development , University of Chicago, Spring, 1952, pp. 23-28.

CHAPTER IX

SUMMARY--HOW BOYS BECOME MEN AND GIRLS BECOME WOMEN

Many "normal" students fail or have difficulty learning to read. In many of these individuals, the failure is a result of sex differences in learning. This sex difference is fundamental and related to the condition of "maleness" rather than secondary sex characteristics which become evident at the time of puberty. Males, as a group, tend to be more kinaesthetic (muscular) in their learning patterns, as contrasted to females, who tend to be more visual-auditory in their approach.[95]

In these school failures, we are seeing an accentuation of sex differences. This magnification of "maleness" resulting in failure or difficulty in the classroom has been the result of the culture and the methods of teaching rather than in any innate deficiency of the individuals concerned. As with any physical characteristic, there are vast individual differences with most persons having a combination of visual-auditory and kinaesthetic learning patterns.

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[95] H. A. Witkin, op. cit., pp. 145-170.

Many scientific insights have been gained from accidents. This cultural accident, of males having difficulty in the classroom learning procedures, opened the door to the observation of the underlying neural mechanisms and of the need to change the approach to the investigation and understanding of the processes involved.

One of the difficulties has been our language--the tools and symbols we use in our thinking process. The terms, mind and body, have been compartmentalized and separated as a neuropsychological entity. These functions are not separate but operate as a unit, inseparable, one and the same. Therefore, it is of assistance to think of the process as a dynamic one. An analysis shows that "thinking" is actually the dynamic use of words. We condition certain sounds to things, feelings, or processes. They become symbols of mental thought and a way of organizing, defining, and communicating. Writing and reading carries this operation one step further and is a symbol of a symbol. We think in terms of words, and much of our behavior is based on words. Symbols become the means, or tools, of the thinking process and much of our behavior is determined by our thought processes. The Symbolic Tought Process allows behavior or physical movement to be considered thinking; thinking, as behavior; physiological functions as being psychological; and psychological functions as being physical phenomena.

Physicians who are in general practice have stated to this writer that more than 75 per cent of their practice is involved in the treatment of patients with complaints that are all or partly psychological. By the same token, any psychologist in private practice is in reality engaged in the practice of medicine. Words and emotions can create great physical changes in the body. The cause has to be treated and there is no way of separating the mind and body in the living person. It is a dynamic process.

From this writer's own personal experience, it has never been necessary to deal with the serious emotional problems which always accompany "normal" non-readers. The emotional problems disappeared when threat to the symbolic through process was corrected. This finding set off a line of investigation in which we must deal with a basic growth drive. In correcting the frustration to the symbolic thought process, we are removing the case of the disorder, not just the symptoms. Since mind and body are not separated, it is possible to see symbolic thought processes as a human drive. Its characteristic is similar to any other physical characteristic intrinsic to man. Certain functions are "wired in." They participate in the operation of the nervous system as a whole and, therefore, in the development of all behavior patterns and physical characteristics.

The work of Penfield and others demonstrates how this development of the symbolic thought functions (speech) in man was something new in mammalian evolution and that no other animal studied possesses such functions. Images required for reproduction are really a pattern of the motor complex and the neurones involved are found in the speech areas. Again, we see see how motor functions are inter-related and a part of symbolization, thinking, and speech. We can also begin to see the importance of kinaesthesis and motor patterns in the basic process of thinking, as well as of behavior.

Additional support for the important role of kinaesthesis was found in a theory of perception by Werner-Wapner when they say that perception consists of really how things appear to an individual and is also, at the same time, a neuropsychological entity or process. As a result of a great deal of investigation, the Sensory-Tonic Field Theory was developed by these two distinguished scientists. They pointed out that perception can be affected in a similar manner by stimulation through the senses, as well as by direct stimulation of the muscles. This theory is extremely significant. For the first time, the possible importance of kinaesthesis is pointed out in a theory applicable not only to perception, learning, and education, but to behavior.

Substantiation of the importance of kinaesthesis to learning and perception has been found in numerous experiments and investigations, and it has been pointed out that males have a greater need for kinaesthesis in learning and perception processes. It is also becoming evident that visual imagery is not necessary for the process of thinking, and the possibility has been raised that scientific men, as a class, have feeble powers of visual representations.

We know, from the work of E. E. Maccoby and J. A. Sherman[96] that spatial ability shows a marked superiority for boys. This process begins during the early school years and continues on through the later school years. Analytical ability or field independence shows a similar pattern to spatial ability as measures of analytical ability. The differences in numerical ability (boys consistently out-performing girls in high school) may also be related to differential spatial abilities required in geometric and mathematical problem-solving. Science is defined as the interrelationship of material in a meaningful and systematic manner. In one sense this is an intellectual expression of organized physical movements in space in a meaningful

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[96] The Development of Sex Differences (Palo Alto: Standard University Press, 1966). "Problem of Sex Differences in space perception and aspects of intellectual functions," Psychological Review, 74, 1967, pp. 290-99.

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The new elementary school student with strong kinaesthetic abilities faces an almost impossible task in school. The words "cat" and "dog" written on the black board are meaningless to him. They appear as non-sensical designs and are in no way related to his involvement with the enviornment. This does not mean he can not see these designs or words but that they have not been incorporated into his perceptual process or under standing. They lack organization and meaning for him until he can relate them to his own physical movement or body feelings expressed in intellectual functioning. He must first condition his other senses to his primary and basic muscle motor complex image pattern.

Teachers miss this point because vision seems to dominate in impact over ALL the other senses. Also our original means of relating things now functions unconsciously and is always a part of the hidden background. This is true even for kinaesthetic learners because vision allows greater freedom and discrimination in movement and selectivity. What makes the whole problem even more difficult is the invisible and un-noticed manner of kinaesthetic participation in the learning process.

Once the kinaesthetic learner traces the word long enough and says the word out loud by syllables, it becomes a part of his perceptual process or understanding. The word becomes real and meaningful to him in a way that can not be equalled by a static visual image.

Examples of the importance of kinaesthesis are more easily demonstrated in the automobile. The car is so closely related to our freedom of movement, it can become an extension of our selves. We have all seen the high school "teenager" who is the proud owner of a "hot rod". The car becomes a status symbol and an extension of his own personality and masculinity. The car may even be sexualized further by giving it two of every thing. Every dime the teenager can get is spent on the car giving it two spot lights, two radio antennas, two side view mirrors, and even two baby shoes may be hung from the front inside windshield. He will race his engine to attract attention and at the drop of a hat be willing to prove his car is faster and better.

A Parole Officer friend of mine loaned his car to his daughter on a temporary loan basis so she could drive to Junior College for several weeks. He can't get his car back. She now feels he has given the car to her. She has obtained a proprietary interest in the car through her physical involvement in driving the car. It has become an extension of herself and therefore no longer Dad's. It would be unfair for him to want it returned.

My former landlady use to allow tenants to store extra possessions in the basement of the building. She would constantly rearrange and move the items in a neat and orderly fashion. After rearranging the items enough times, she developed a proprietary interest in these belongings. She would begin to feel the tenants didn't want these items because they were left there for such a long period and that they were hers to do what she wanted. If you were not careful, she would give your things to her relatives, friends, or other tenants.

Many men have a pair of favorite worn out shoes they like to wear when they are relaxing because they are so comfortable. These shoes, through constant wear and association, have taken on special significance. They have become like an old friend. It can almost be grounds for a divorce if the wife gives them away to the Salvation Army.

Sexual organs are also kinaesthetic areas of stimulation. Many men with strong intentions of never getting married, fall in love with a woman after becoming sexually involved. Symbolically, the woman becomes an extension of himself. (She becomes an extension of his penus- his penus holder) The kinaesthe5ic stimulation has activated his lower brain centers and bypassed cortical inhibition. Learning has been enhanced and a psychological marriage performed. He is shortly walking down the path to the alter of marriage and all his plans to the contrary have gone astray.

Slang language used by men illustrates this point very clearly. In the gym or barracks such crude expressions as the following can be heard. "A stiff prick has no conscience". "His balls must be bigger than his head"."He must be pussy whipped". This last term may be used to describe a male overly passive to a female. Our slang language already recognizes the importance of physical involvement in the learning process.even through the educational establishment does not.

Items we manufacture through our own physical effort become much more valuable to us then other items many times more expensive. There is a kinaesthetic involvement that makes these items much more personal and important- almost a part of our selves. This point is carried over to artistic and intellectual levels.

Men may speak about their book, painting, or project they have

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produced through their own physical involvement as "THIS IS MY BABY". Great musicians can make their pianos, violins, or music instruments a part of them selves. The music takes on aspects of their personality and the instrument becomes a part of them. Some artists get so involved with their artistic creations, they can not bear to part with them or sell them for profit. They say it is like losing an arm or leg.

Marching in military organizations, singing and group participation in rituals in Church, initiations of clubs and fraternities, tean sports and activities, are all kinaesthetic involvement that help make the individual a part of the group and a believer and a supporter of the activities. This is all accomplished through physical involvement and conditioning at the same time. A psychological marriage is obtained in the use of kinaesthesis.

Proprioceptor stimulation is so vital and important to our successful engagement of the enviornment- an important sense in learning- its loss is similar to losing both arms, legs, and being unable to speak. We know that when a Doctorial candidate for the Ph. D. can not spell and must have a good secretary check his Dissertation very carefully before he submits it to his committee, the inability to spell can not be due to a lack of intelligence. We are forced to look to the educational process or method as one possible source of difficulty.

The Educational establishment has not fully utilized kinaesthesis or proprioceptor stimulation in its methods. Once it does, education may become a deadly weapon. Programing of the individual- population [illegible] control- may be a real possibility in the near future using kinaesthesis properly.

way. Again, we can begin to see the importance of kinaesthesis and proprioceptors stimulation in developing of intellectual skills and the possible variations. As spatial relationships are only indirectly dependent upon reading and academic skills, we may be getting a sample of achievement that is possible if kinaesthesis or proprioceptor stimulation is utilized in the development of verbal skills, including reading and writing.

The reason why such extremely significant and important neural processes have remained undiscovered for so long may be due to the nature of the proprioceptors which function so effectively and smoothly in the volunteer muscles. The various proprioceptor sensations are sometimes lumped together as the "position sense" and are called kinaesthesis or movement feelings. Senses that have special organs are noticed much more than those that do not, such as eyesight, compared to touch. Proprioceptors have no special organs and function in such an unnoticed manner. We can sit down in a chair without noticing the muscles or muscular pattern achieving it, just as we can have a finger in our mouth without being aware of it. These extremely important senses feed information directly into the lower brain centers and develop structurally after the interoceptors. The five senses generally feed information into the cortex, having an inhibitive, selective, or delaying action. Proprioceptors excite the subcortical part of the brain and can circumvent the inhibitive functions of the cortex. At the same time, apparently, they can stimulate learning or perceptual processes at a higher level. They seem to have a double function and are more basic to the individual's orientation, adjustment, movement, and involvement with his environment. Other sense functions must be utilized to do so effectively.

In the beginning, the human being, in order to survive, had to be able to move in such a manner as to be able to obtain food, other basic essentials of life, and to protect himself. In order to do these things, he had to utilize all his senses and intellectual ability. This all had to be related to effective movement and organization or he was destroyed. If time had to be spent on thinking about the actual process of moving (the physical mechanics) he would go hungry, since too much time would have been wasted in the mechanics of the movement. This is similar to the case of the successful operation of the car, which does not depend upon our thinking of how or where to place our feet in order to operate the brakes or gas pedal.

There is almost a hierarchy of sensations, as far as needs are concerned. Oversimplified, the pain of an empty stomach from the interoceptors activates the muscles to do something about it. The proprioceptors must utilize the exteroceptors (the senses) to make effective movement and, thus, to appease the hunger.

In the layman's terms, there is no message like the impact of an empty stomach to get one moving. Although a picture may be worth a thousand words, any good salesman knows that the best way to get a customer to buy a new car is to let him physically drive it in order to "get a feel" of the product. In practice, we unconsciously know the effectiveness of the proprioceptors and use them every day. However, because of the emotional impact of vision in allowing us greater movement and selectivity, it only seems to have a more basic primacy. What really counts is what we do, not what we see or say. We have six senses, not just five. The proprioceptors--the sixth sense--may be the most important sense of all.

Education has not utilized this sixth sense as a basic method in the educational process. It has followed a tradition, basically without change, for thousands of years. No one is to blame for using the most obvious, easiest, and most apparent method, the visual-auditory approach. Civilization makes us feel guilty about being muscular. The word "muscular" is associated with being animalistic. Obviously, we say that anything so common as the proprioceptors can't be worthy of profound academic study. Sometimes it is the most obvious, the unnoticed, which is the most important.

In order to modify the present trends in education, the Fernald Technique was suggested as that offering children a basic choice in their learning patterns. It allows a feminine or masculine approach, according to the needs of each individual.

From the conditioning theory viewpoint, it is particularly sound, since it conditions simultaneously all the five senses to a basic proprioceptor neural pattern and does not require any visual imagery. Although it may be a more difficult method initially from the point of view of teaching time and clerical needs, in the long run it is easier and less costly.

The biggest problem will be in changing the cultural "hang-ups" and in overcoming the resistance of the educational Establishment. In the final analysis, it is believed that only intervention and support from the highest level of the Federal Government may effect the needed changes in the educational system. But the changes must come. Not only do we want one hundred per cent literacy in the United States, but it is absolutely urgent if we are to prevent further emotional-physical damage to the symbolic thought processes of millions of males and, indirectly, to the same number of females. Education is much more important and vital than we have recognized. The educational process formulates and affects behavior and health through its methods, not alone from the content of the material presented in the classroom, but in the manner of its presentation. The final result will affect the psychological-physical health of the nation for generations to come.

We must consider emotional problems not only from the emotional dynamics and behavioral point of view, but also consider what part the method plays in their formation. The mind-body point of view, or concept, must be taken seriously. The physiological-psychological concepts are necessary as the tools in investigation and recovery. The cultural accident of non-readers has opened the door to new vistas and horizons. We can now begin to understand the nature of men--how girls become women and how boys become men. We are in a better position to appreciate and understand the differences. There is no separation between mind and body in the symbolic thought process.

Society and the educational system can no longer afford to force men into feminine learning patterns and to treat both sexes as if there were no difference in such a fundamental procedure as the symbolic thought process--the very basis of formulating intellectual development, emotional responses, and social behavior.

IMPLICATIONS

DEVELOPMENT OF NONCONFORMING BEHAVIOR

Causes of Homosexuality

The means that society utilizes to mold the physical-emotional-intellectual development of its members may be a more important factor than the values taught by the system. By forcing men into feminine learning patterns and frustrating their symbolic thought processes, a physical-emotional malfunction results, since these elements are all inter-related. Some of the characteristics of our American culture may be analyzed from this point of view.

The American male is characterized by his emphasis on masculinity. The worst insult you can hurl toward a "real" man is to call him a "queer." Men are in conflict--up-tight--about their masculinity. Small boys will fight over being called a "sissy." In fact, this conflict is so strong that the United States Marine Corps capitalizes on this fear. Their recruiting posters state, THE MARINE CORPS BUILDS MEN. All those in doubt about their masculinity and overly anxious to deny it have a wonderful opportunity under this government's sponsorship to do so.

The Hippies, in part, seem to be in rebellion against this masculinity overkill by denying the importance of sex differences: long hair, clothes, and jewelry are no longer a means of telling the sexes apart. Many male hippies have longer hair and wear more jewelry and beads than the average female. In addition, similar clothes may be worn by both sexes. They establish "user" ghettos, or colonies, such as the Haight-Ashbury section in San Francisco. Paranoia, reflected in racism, changes form and the Hippies reject our competitive culture for a "better" way of life, thinking they have all the superior answers and are in a constant euphoria in the consumption of drugs.

This masculinity hang-up can be seen everywhere. Men feel it is a sign of weakness, "sissy," to express affection, warmth, and tenderness. As a result, many men react with harshness and lack of tenderness in their relationships with women and deny their own children their greatly-needed paternal and masculine affection. The nature of male-female relationships becomes distorted and masculine-masculine relationships become a facade. Wainwright Churchill feels this development is due to American culture's not only being erotophobic but also homerotophobic, as is most of the entire Judaic Christian World. Based not only upon experience gained from his psychiatric practice, but also from a historical and cross-cultural study, he further develops the line of thought that, in a majority of cases, homosexuality is normal behavior. It is society, or the American culture, that produces the abnormalities.[97]

In order to lay a foundation for the manner in which homosexual behavior is being molded and produced by the formation of the symbolic thought process, several other authorities will be discussed in the following paragraphs. These authorities either directly, or indirectly, suggest that homosexuality is normal behavior and, in many cases, culturally produced.

Over twenty-five years ago, T. W. Richards, in a discussion of homosexuality as part of a text on clinical psychology, stated:

> Difficult because of the strict social taboos that

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[97] Homosexual Behavior Among Males (New York: Hawthorne Books, Inc., 1967).

> surround the whole subject of sexual behavior, it is nevertheless important to understand sexual maladjustments in the light of normal sexual development. The problem of homosexuality, rather than being a problem of undesirable and unacceptable behavior, is one of public opinion and social prejudice operating to accentuate maladjustment rather than to prevent it or help it. . . . Behavior motivated toward the same rather than the opposite sex is revealed in many societies, such as fraternities, and sororities, or in the organization of athletic teams. Among women, more so than men, physical embraces and other demonstrations of affection reveal similar motivation. Certainly the members of a social group composed exclusively of members of the same sex are not homosexuals, but their social relationship is a reflection of the normal affinity for the same sex and hence reveals normal homosexual motivation. . . . The co-existency of masculine and feminine traits in all individuals is universal, a fact that indicates that everyone to some extent is homosexual as well as heterosexual. . . . Because of society's greater tolerance of homosexuality in women, it is probable that in contrast to men, fewer of those maladjustments that are referable primarily to homosexual conflicts.[98]

Dr. Evelyn Hooker's research, supported by a grant from the National Institute of Mental Health, found that, in a given group of homosexuals compared to a group of normals, both groups had approximately the same percentages of superior emotional adjustment as maladjustment. These ratings were done by judges who had the test protocals from the Rorschach, MAPS, and TAT, and the judges did not know in advance whether the test results came from homosexuals or "normals."[99] This extremely important work indicated that homosexuality as a clinical entity does not exist. Its forms are as varied as are those of heterosexuality and it may be a deviation in sexual pattern which is within the normal range, psychologically. Also, the role of particular forms of sexual desire and expression in personality structure and development may be less important than has frequently been assumed.

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[98] Modern Clinical Psychology (New York: McGraw-Hill Book Co., Inc., 1946), pp. 103-104.

In this regard, Wainwright Churchill feels homosexuality is a release of physical energy, as is all sexual behavior, and can be "normally" conditioned to a number of situations, conditions, and objects.[100]

Certainly, one way this energy can be released would be in a reaction in nonconformity. Robert Linder defines homosexuality as "a rebellion of the personality that seeks to find--and discovers--a way in which to obtain expression for the confined erotic drives."[101]

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[99] "The Adjustment of the Male Overt Homosexual," Reprint from The Journal of Projective Techniques, Vol. 21, No. 1.

[100] Op. cit.

Hostility, in one sense, can be defined as a form of energy related to the survival of the organism which is given a cultural connotation. Hostility is obviously not good or bad. Being able to express it may be better than repressing it. It is of more help to an individual if it can be expressed in a creative way and he can build constructively to replace what he tears down.

Again, Robert Linder states:

> Our own Western Christian Civilization (Toynbee's designation), basing itself on Judaic morality, has tended toward the repressive side. It has stigmatized the erotic component of human nature as base and has traditionally regarded everything connected with the secual instincts with abhorrence. Perhaps even more than any previous great civilization, it can be viewed as sex-denying. . . . Given this picture of a sex-rejective, sex repressive society, inversion must be--a pattern of sex orientation adopted by certain individuals as their solution to the conflict between the urgency of the sexual instincts and the repressive efforts brought to bear upon sexual expression by the reigning sex morality."[102]

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[101] Must You Conform (New York: Grove Press, Inc., 1956), p. 32-41.

[102] Ibid.

The relationship to sex repressiveness has been clear in the development and frustration of the symbolic thought processes, as well as to the whole cultural approach to sex. Homosexuality may be a normal expression of the energy created as the result of inappropriate means to feminize men in their learning patterns as there can be no separation in mind-body. That this process can develop homosexuality will be covered from six different points of view.

The first, as a general cultural rebellion, has already been discussed in the work of Lindner, except that in this case we can now see where this rebellion might take a sexual outlet through symbolic thought process and why a great deal of hostility may be present as a result of the attempts of a feminization of men through the cultural learning processes.

The second point is a fear reaction. An individual may experience an enjoyable homosexual experience or relationship. Yet society has debased, repulsed, and directed a great deal of hostility towards homosexuality. He must now face a new fear. Is he a pariah or homosexual because he found a sex experience enjoyable? There is already a great deal of group concern over masculinity which may be due, in part, to the cultural approach to the Symbolic Thought process. He, individually, may been subject to pressure in the Symbolic Thought Process. He must now face a new fear which is culturally imposed--am I queer? Society is making a simple sex experience which, under other conditions, would be of no importance whatsoever, a question of vital importance to the individual's self-concept. He may be forced to make a decision where no decision is required. Under the Symbolic Thought Process frame of reference, words (a behavioral process in themselves) can influence behavior and emotions. We are producing conflicts and behavior problems totally unnecessary and unrelated to the situation. The homosexual involvement or experience could have been just another experience, not important, but just a pleasant interlude. Society, or our culture, has enlarged, exaggerated, and developed into abnormal proportions a possibly unimportant experience. The attitude of society is creating homosexuality in its efforts to repress it.

A third means is unfinished business with Dad. Every child needs the love, affection, and guidance from two parents. In our society, affection from males is looked on with suspicion and almost as a sign of weakness. If the male boy does not get this affection and recognition from his father, he will find substitutes for it. When this basic and indispensible need to complete his personality development is conditioned with pleasurable sexual sensations from other males, the behavioral-emotional-physical needs may be fixed. They become a part of his Symbolic Thought Process and development.

A fourth means might be through a defense of masculinity. A male has been "shook" in his Symbolic Thought Process. He has had to fight to maintain his masculinity due to the threat imposed by feminine learning patterns and the message conveyed by the process itself. On the other hand, society's attitude is one of over-emphasis on masculinity. He may resolve the conflict by placing an over-emphasis on those things masculine. He rejects feminization and women, in general and in particular as dangerous and assaultive to his mind-body development. His love objects become men and all those things masculine. He has a need to pursue, follow, and emphasize the masculine components in his life as being a less dangerous alternative to his mind-body integrity and development.

A fifth means in the development of homosexuality is the acceptance of feminity. In the process described in the preceding paragraph, instead of defending against femininity, it is accepted rather than rejected. The message conveyed by means of the Symbolic Thought Process has been too successful and the individual has developed a basic feminine orientation. As women are atracted to men, he follows the acceptable cultural pattern which has been internalized. This attraction may be acted out sexually.

A sixth class is for those individuals remaining in limbo. They accept both messages taught them (masculinity over-emphasis by the culture and the feminization of the Symbolic Thought Process) and pursue a bi-sexual orientation in their sexual expression.

In the analysis of homosexuality, we need additional tools other than psychoanalytic techniques that state that homosexuality is a sickness and results from a desire at a subconscious level to have sex with one's mother. The Symbolic Thought Process gives us an additional tool in understanding the causes of homosexual behavior. It may be a normal product and the result of our culture. It can result from man's erotic feelings, the emotional environment he is raised in, and the message, the means, and the method of Symbolic Thought formulation.

Homosexuality is varied in its behavior and its causes are multiple. Society's attitude toward homosexuality is not only damaging to a substantial minority of our population, but destructive to the entire majority. As in physics, where every force has an equal and opposing effect, these same forces seem to operate either creatively or destructively for society. Unhealthy attitudes of the majority toward a minority has an equal and opposite destructive effect toward the majority.

We must be able to free ourselves of our own culturally built-in limitations. There is a need to develop greater creativity and to utilize fully all available human resources. We have spent far too much wasted effort in destroying ourselves and in hampering human progress.

Causes of Psychopathogenesis

(Frustrated Patterns of Symbolic Thought Process)

The mind-body road to emotional illness is like slipping on a greased banana peel. You don't see it, you have to fight to keep your balance, and you can hit bottom quickly. A sound theory as to the psychogenesis of emotional problems is that the banana peel should be resting on firm ground. It should be placed on a firm basis of motivation.

Meeting physical needs is a primary objective of a human being. When a man is hungry, where the next meal is coming from is more important than love or esteem. A. H. Maslow confirms this when he says, "Undoubtedly these physiological needs are the most prepotent of all needs. Thwarting of unimportant desires produces no psychopathological results; thwarting of basically important needs does produce such results. . . . A conflict or a frustration is not necessarily pathogenic. It becomes so only when it threatens or thwarts the basic needs or partial needs that are closely related to basic needs."[103]

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[103] Maslow, op. cit., pp. 82-158.

Damage to the Symbolic Thought Process, a vital function in the effective movement to obtain food and other basic needs, causes serious emotional problems. This is true whether the damage is destruction of brain tissue, as in cases of aphasia, or whether it is the result of the inability of the individual to utilize natural talents in the formation of symbolic thought, as in clinical learning cases. A third means of damage (rather than a deficiency or a lack or development) is termed psyphys (a combination of the words psychological and physical). It is a deficit in function not resulting from brain damage or an impairment or blocking in development. It is a short-circuiting, a malfunctioning, or a disturbance in the neural integrative process in symbolic thought.

We know from the work of Selye[104] that the body reacts the same way to psychological stress as it does to physical stress resulting from trauma or bacterial invasion. One process can have an effect on the other.

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[104] Hans Selye, The Stress of Life (New York: McGraw-Hill Book Co., Inc., 1956).

Therefore, the integrative functions not only have an inter-relationship but may change neural pathways.

Some past electrical studies of the brain by Travis on stuttering seems to be additional confirmation of this concept. He found in his E. E. G. examination of stutters, a lack of cerebral dominance when stuttering which was accompanied by a voltage increase in brain potentials. This finding of a bi-lateral brain wave equality in form and amplitude was not found in the stutterer's normal speech. With no cerebral dominance, inhibition, or blocking of speech performance might logically be one of the expected results. Although this is a special case for stuttering, we find evidence of a disturbance of integrative function resulting in a behavioral problem.[105]

There are special conditions when the short-circuiting, disturbance, or malfunctioning can occur in neural integration. It is when an individual is forced to make responses in a situation where he is already in a state of threat due to emotional and/or physical frustration. Selye might term this a mal-adaptive response to stress. Norman R. F. Maier would term the resulting behavior, frustrated learning. He would term frustrated learning as an inappropriate response to obtaining a goal and a result of being unable to reach this goal.[106]

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[105] Lee E. Travis, "My Present Thinking on Stuttering," Chapter 24, Speech Therapy (Ed. by Charles Van Riper) (New York: Prentice-Hall, Inc., 1958), p. 51.

An example of this would be an individual who commits suicide because of a loss of love. He is making an inappropriate response to the recovery of his lost love object or in finding love once again.

Maier describes frustrated learning as being stereotyped, characterized by a lack of effect, rigid, not responsive to change by punishment, an end in itself and not influenced by consequences, compulsive, can be an outlet even if not adoptive, precipitated more by availability than consequences, de-differentiates, regressive, and in some cases leads to mass behavior or convulsive behavior.

Maier developed his theory of frustrated learning vs. motivated learning through experimenting with rats. When frustrated learning patterns, however, become lodged in the Symbolic Thought Process as a maladaptation to stress, the results can be expected to be quite diverse. Due to the inter-relationship of mind-body-emotion and the greater development of thinking in human beings, almost any type of behavior might be produced. This could range from hallucinations, distortion of perception, impairment of concentration, daydreaming, psychosomatic disorders, etc. Inappropriate behavior could range from mild to neurotic to psychotic. Results would be dependent upon the stress--its nature and duration, the availability of the response, and the individual's ability to deal with stress. As it seems possible for frustrated patterns to be superimposed on other frustrated learning, the possibilities become extremely involved, diverse, and unpredictable.

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[106] Frustration (New York: McGraw-Hill Book Co., Inc., 1949), pp. 159-161.

The concept of the organism must be considered as a whole and several authorities in the past have pointed this out. Eugene Bleuler says that illusions and hallucinations of the kinaesthetic senses or the vestibular organs are usually in the background of the clinical picture of schizophrenia.[107] Heinz Werner and Seymour Wapner state that, in cases of hysteria and schizophrenia, there can be a postulated linkage between the symbolic level and a primary level of skeletotonic and viscertonic activities. The concept of symbolic thought process becomes a useful tool in the analysis of all emotional problems.[108]

In summary, there are three major routes to a disturbance in the Symbolic Thought Process which always result in serious emotional problems. These are:

1. Destruction of brain tissue, such as in cases of aphasia.
2. Deficit due to impairment, blocking, or frustration of development.
3. Deficit from reaction to stress--maladaptive or frustrated learning patterns being established in neural integration.

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[107] Dementia Praecox or The Group of Schizophrenias (New York: International University Press, 1952), p. 101.

[108] "Sensory-Tonic Field Theory of Perception," Perception and Personality--A Symposium (Ed. by Jerome S. Bruner and David Krech, Durham: Duke University Press, 1950), pp. 103-104.

Disturbance in the Symbolic Thought Process is distinguished from non-conforming behavior, such as homosexuality, which may not be due to a deficit in symbolic thought process. Although non-conforming behavior may develop from a disturbance of the Symbolic Thought Process, is may also develop normally due to the following causes:

1. Faulty and unhealthy cultural pressures and attitudes producing non-conforming behavior as its end product.
2. A reaction against, or acceptance of the feminization of men through the learning patterns (the method) in the formation of their symbolic thought.
3. A requirement for the successful growth and development of the symbolic thought process is the love and affection from two parents--a mother and father. If paternal affection is missing, the need becomes magnified, such as in any other physiological need such as food, and a substitute :found--must be found. This affects the manner of how all affection in the future

will be expressed.

The information we have gained from the study of clinical learning cases, as well as aphasics, has given us an additional tool in looking at all behavior--both non-conforming and the sick. One of the immediate results has been the discovery of a sixth sense--proprioceptor stimulation. It is sometimes called kinaesthesis, or muscle learning. It seems to be a basic building block in neural integration for both males and females. In addition, for learning and perception, some men are entirely dependent upon kinaesthesis. There does appear, however, to be basic sex differences with men as a group having stronger kinaesthetic needs, while women seem, as a group, to be more visual-auditory in their learning.

As proprioceptor stimulation has been basically overlooked due to its smooth and unnoticed functioning, our entire approach to building additional resources to handle stress and in helping individuals with emotional-behavioral problems must be re-evaluated. We to more effectively use this sixth sense in all learning situations and in the treatment and therapy of all emotional problems.

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